Government of West Bengal

Local Self-Government & Panchayats Department

Report of the Corporation of Calcutta Enquiry Committee

Volume I

Report

29th September, 1962

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REPORT OF THE CORPORATION OF CALCUTTA ENQUIRY COMMITTEE

Volume I

Report of the Corporation of Calcutta Enquiry Committee

To
Sri Anil Kumar Datta, I.A.S,
Joint Secretary,
Local Self-Government &
Panchayats Department,
Government of West Bengal.

Calcutta, 29th September, 1962

Sir,

The Government of West Bengal in the Department of Local Self-Government and Panchayats by Notification No. 3099/M. 1C-51/62 of 25th April, 1962 published in the *Calcutta Gazette* on 10th May, 1962 set up a Committee of Enquiry on certain aspects relating to the working of the Corporation of Calcutta. The said Notification reads---

> "In view of the state of affairs obtaining in certain of the essential services performed by the Calcutta Corporation, it is deemed expedient by the Government of West Bengal to set up a Committee of Enquiry composed as hereinafter stated, to examine and where found necessary, recommend remedial measures for the consideration of the Calcutta Corporation in order to bring about improvements in the functioning of this body in matters especially connected with the environmental services of water-supply, drainage, sewerage, street cleansing, refuse collection and disposal. The Committee shall be constituted as follows :---
>
> 1. Sri J. N. Talukdar, I.C.S. (Retd.)- *Chairman*
> 2. Sri P. C. Bose, late Chief Engineer, Public Health Engineering, Health Department, Government of West Bengal - *Member*.
> 3. Commissioner, Corporation of Calcutta - *Member*.
> 4. Sri J. C. Talukdar, Joint Secretary, Local Self-Government & Panchayats Department - *Convener*.
>
> The Committee is to submit its report in the first instance to the Government of West Bengal in the Local Self-Government & Panchayats Department within three months of the date of publication of this notification in the *Calcutta Gazette*.
>
> By Order of the Governor,
> Sd/- J. C. Talukdar.
> Jt. Secretary

At the time of notification, the Commissioner of the Calcutta Corporation was Sri P. C. Majumdar, I.A.S. (Retd.) ; Sri Majumdar relinquished charge of this office on 18th July, 1962 handing over to Sri S. B. Ray, I.A.S. At the express wish of the Chairman of Enquiry Committee and with the consent of Government, Sri P. C. Majumdar continued as a Member of the said Committee.

2. The Committee in the course of its work visited all of the important installations of the Corporation of Calcutta relating to the intake and supply of filtered and unfiltered water, drainage and also all aspects of conservancy including several dumping grounds, the Railway siding, Motor Vehicles garages and maintenance workshops.

3. The Mayor of Calcutta Sri R. N. Mazumdar, the Deputy Mayor Sri Tulshi Charan Paul and the Chairmen of the Standing Committees were also kind enough to see the Members of the Committee more than once, to discuss the needs and wants of the Corporation. The Committee were assiduously attended to, whenever called upon, by the officials of the Corporation and in particular, by its officiating Chief Engineer, Sri S. C. Mitra and Finance Officer and Chief Accountant, Sri P. Mitra.

4. The Committee wishes to place on record the unstinted co-operation that it received in its work from the Corporation of Calcutta's elected representatives as also its officials ; the Committee also feel it necessary to acknowledge its deep gratitude to Sri P. C. Majumdar in both his personal capacity as also during the time he held office as Commissioner of the Corporation of Calcutta.

5. The report of the Committee could not be completed within the period of three months on account of pre-occupations of the Members of the Committee with their normal work and the Committee beg leave to be excused for the delay of six weeks in the submission of this, their report and their recommendations.

Yours faithfully,

SD/- J. N. TALUKDAR
Chairman of the Committee

SD/- P. C. BOSE
Chief Engineer, Calcutta Metropolitan Planning Organisation

SD/- S. B. RAY
Commissioner of the Corporation of Calcutta

SD/- P. C. MAJUMDAR

SD/- J. C. TALUKDAR
Secretary, Co-operative Deptt. and the Convener

REPORT OF THE CORPORATION OF CALCUTTA ENQUIRY COMMITTEE

REPORT

VOLUME I

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CHAPTER I

WATER SUPPLY

Sources

1-1 The Calcutta Corporation supplies both filtered and unfiltered water, the filtered water being intermittent, whereas the unfiltered water is continuous.

Filtered water

1-2 Water from the river Hooghly is drawn through five mains, three 54″ diameter, one 48 diameter and one 36″ diameter respectively at Palta within the Barrackpore sub-division. At this Palta station exist four steam engines to serve as intakes, each of whose capacity is rated at 1.75 m.g per hour. It was noticed that all these plants are over fifty years old and hence totally obsolete, making it difficult, if not impossible, to replace parts affected by wear and tear. The deterioration to these plants has been excessive, occasioned by the fact that the Corporation has not lain aside any one plant for even a period of seven days, although the inefficient performance of these steam engines has been aggravated by the use of coal of a lower grade than contemplated by the manufacturers. No effort had been made over a considerable period of time for thorough overhaul of these machines and it will not be surprising if any plant breaks down in the near future with no prospect whatsoever of its being replaced or put back into operation at short notice.

1-3 From these intake stations river water is pumped into four pre-settling tanks whose purpose is to promote sedimentation and thus lower turbidity to facilitate and accelerate the final processes. As will be seen, from Appendix I, all the four pre-settling tanks have completely silted up resulting in more harm than good being done by river water being channelised through them. As a consequence, the final settling tank is now performing the work of the pre-settling tanks and is in the process consequently of itself undergoing rapid siltation. The general area around both the pre-settling and the final settling tanks typifies the general attitude regarding those highly essential operations being looked after. It is no surprise, therefore, to find that turbidity after final settlement is of the order of 30 to 40, whereas the maximum permissible is 20. So far as the pre-settling tanks are concerned, the Committee were given to understand that efforts at removing silts had not been resorted to in recent years by the Corporation on account of the fact that Government had prepared a scheme to utilise this silt for the manufacture of machine-made bricks and under the terms of the scheme, Government were to remove the silt progressively.

1-4 The final processing of the river water is done by slow and rapid filter beds, a method both slow and obsolete, and it is time the Corporation replaces the slow filter beds at least by the continuous clarifloculation system now in vogue in many parts of the world. The element of foreign exchange required is not high and land in plenty is also available. The conversion to this system would also do away with the Corporation's difficulties in replenishing the scraped fine sand, which outlasts its utility and is removed from the slow filter bed.

1-5 The miserable condition of some of the slow sand filter beds can be seen from Appendix II, showing the depth of sand. It may be remembered that after efficient and satisfactory filtration, a minimum depth of 1 ft 6 inches is recommended.

1-6 As in the case of intake pumps, the boilers are also obsolete and not properly maintained. Progressively the steam-operated plants should be converted into electric ones. Buildings, trolleys and trolley runaways also indicate that much care has not been bestowed upon this focal point in Calcutta's filtered water supply.

1-7 We would incidentally note that the large diameter spot tubewells which supply 14 million gallons a day show signs of deterioration, part of which is due to the sub-soil water of Calcutta being extremely hard. Appendix III shows the stand water level and draw-down of some of these tubewells which have substantially increased. It does not appear to us that these tubewells are being surged at all regularly, though we feel the process to be very necessary.

Pumping Station---Talla

1-8 All the boilers are old and are in a state of disrepair and are fit to be scrapped, not being less than 35 years old. Here, too, progressively the installation should be converted from steam to electricity.

Distribution Lines

1-9 It has been noticed that the pressure in different zones and wards is extremely uneven as would be borne out by Appendix IV. The mains are defective in design and require to be corrected by boosting as recommended in the Report of 1945 (Appendix V). Ultimately it would be necessary to re-orientate the distribution mains, but for the time being improvements may be effected within the present lay-out.

1-10 Control measures to ensure minimum wastage through leakage are hardly working and the Corporation's officials themselves estimate that wastage through leakages and other sources are almost 25%.

1-11 An analysis report of bacterial tests of street hydrants, house taps and reserve tanks will be found in Appendix VI and cannot be regarded as anything but highly unsatisfactory. We feel more samples of water from house taps should be analysed and steps taken to rectify deterioration detected.

1-12 Mention should be made here of some of the nefarious practices indulged in by householders, aggravated no doubt by the uneven and erratic supply of filtered water and connived at, we suspect, by Corporation officials. The main nefarious practices observed were : (1) direct pumping from service connection, (2) construction of underground reservoirs, (3) provision of u.f. water taps, and (4) use of filtered water for washing cars etc.

1-13 There are a large number of vacancies among the staff, as will be seen from Appendix VII. A large number of the existing supervisory personnel both of the pumping stations and entrusted with distribution work are not fully qualified.

Routine Maintenance and Stock of Spare Parts

1-14 We are unable to agree that the total lack of routine maintenance was unavoidable and patch and emergent repairs on the occasion of breakdowns which are increasing, lend support to this view. We would at the same time hold that the system in vogue for the indenting and storing of spare parts is totally defective and in this connection, the remarks and recommendations made in respect of automobile spare parts equally apply.

Unfiltered Water

1-15 Supply of unfiltered water, it has already been stated, is continuous and is estimated at 90 million gallons per day. The unfiltered water is pumped from two pumping stations, viz., Mullick Ghat and Watgunge. Although unfiltered water is a highly potential source for communicable diseases like Cholera, Typhoid and Diarrhoea, it has not been possible and will not be in the near future (judging from the progress of work of new construction which is being undertaken in respect of 72´´ main) for the Corporation to fulfil the needs of its citizens by the supply of adequate filtered water.

1-16 The Committee, therefore, took some pains in the matter of seeing whether unfiltered water in whole or in part could be treated as reasonably safe. The Committee are of the definite view that sufficient vacant lands exist at the Watgunge Station to provide for the installation of the clarifloculation system, after which chlorination at reasonable cost may be possible. The cost of such work would be approximately rupees twenty-five lakhs, excluding the cost of land.

1-17 So far as Mullick Ghat is concerned, the same process is also possible, but it might be necessary for intake pumps to be located at the jetties themselves and for a certain amount of re-laying of the dock lines belonging to the Port Commissioners to be done at a cost not exceeding rupees sixty lakhs, it should be possible within two or three years to improve the quality of water served by the Watgunge station, estimated at 30 million gallons per day. The Committee, therefore, feel that this work should be done by Government at expenses to be mutually shared and handed over to the Corporation. So far as the Mullick Ghat is concerned, a further survey would appear to be necessary where the Port Commissioners and the Hooghly Bridge authorities would require to be consulted. It is the opinion of the Committee that the Government in the Health Department should also be actively associated in this project.

1-18 Our recommendations are as follows :-

(i) The steam plants of the intake pumps at Palta Pumping Station should be lain aside according to a programme for thorough overhauling.

(ii) The pre-settling tanks as well as the final settling tank at Palta P.S. should be at once thoroughly desilted.

(iii) At least the slow filter beds at Palta P.S. should be replaced by the continuous clarifloculation system.

(iv) The steam-operated boilers should be progressively converted into electric ones.

(v) Buildings, trolleys and trolley runaways should be properly maintained.

(vi) Large diameter tubewells should be surged regularly.

(vii) All the boilers at Talla P.S. should be progressively converted from steam to electricity.

(viii) The mains of the distribution lines should be boosted and ultimately re-oriented.

(ix) Control measures should be undertaken to effectively ensure wastage through leakage.

(x) More samples of water from house taps should be analysed and defects rectified.

(xi) Unauthorised practices by the public should be checked.

(xii) Immediate measures should be taken to fill up all vacancies.

(xiii) Clarifloculation system should be installed as early as possible at Watgunge P.S.

(xiv) Possibilities of installing clarifloculation system at Mullickghat P.S should be explored.

सत्यमेव जयते

APPENDIX—1 (*Water Supply*)

Monthly average turbidity of Pre-settling tanks expressed as Sio in parts per million.

April 1961 to March 1962

Month	Settling Tank No. 1	Settling Tank No. 2	Settling Tank No: 3	Settling Tank No. 4	New Settling Tank	Remarks
1961 April	299	272	181	262	39	
May	379.3	331.4	273.2	Out of Commission	37.7	
June	384.3	Out of commission	289.6	do	45	
July	209.7	65	80.8	do	42.7	
August	271	54.03	70.8	do	38.8	
September	259.3	52.8	58	do	35.8	
October	326.1	111.3	88.2	do	39.8	
November	180.3	105.6	97.3	do	46.6	
December	110.48	89.03	76.06	do	47.09	
1962 January	164.1	130	137.2	104.4	49.5	
February	106.6	203.3	158.2	120	46.2	
March	245	250	Out of Commission	130	33.5	

Comment :- The inferior performance of settling Tanks No. (1-4) is due to these being heavily silted up and the consequent very short detention periods.

APPENDIX—II (Water Supply)

Re : Old series of filter beds—*Capacity one unit each.*

No. of filter beds.	1	2	3	4	5	6	7	8	9	10	11	12
Depth of sand	2′-1″	1′-9″	†	1′-11″	1′-0″	1′-5″	1′-5″	1′-3″	1′-4″	1′-3″	0′-11″	0′-6″

Re : New series of filter beds—*Capacity 1 unit each from filter bed No. 1. to 24+2 units each from 25 to 29.***

No. of filter beds.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25*	26*	27*	28*	29*
Depth of sand	2′-1″	1′-0″	1′-7″	2′-0″	0′-10″	2′-0″	1′-9″	1′-0″	1′-0″	0′-11″	1′-3″	1′-8″	0′-9″	1′-8″	1 -8″	1′-7″	1′-11″	1′-12″	0′-9″	1′-6″	1′-4″	1′-5″	1′-1″	2′-1″	0′-9″	2′-5″	0′-9″	0′-6″	1′-0″

Re : Series of extension of filter beds—*Capacity 3 units each except No. 4 which is 2 units.***

No. of filter beds.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Depth of sand.	1′-7″	2′-0″	1′-1″″	1′-10″	0′-6″	1′-11″	0′-10″	1′-0″	1′-1″	1′-1″	2′-0″	1′-5″	†	1′-11″	1′-2″	1 ′-5″	1′-8″	1′-9″

† *Out of Commission for replacement.*

SUMMARY

No. of filter units according to depth of sand bed.

Above 2′-0″	....	....	8	Units.
Above 1′-6″ to 2′-0″		....	31	,,
Above 1′-0′ to 1′-6″		....	38	,,
Below 1′-0″	....	....	15	,,

APPENDIX—III
(*Water Supply*)

Location of big tubewells	Date of Commissioning	Static level at the time of commission	Draw down at the time of commission	Static level	Draw down
(1) Cossipore Fire Stn. (40000 g.p.h Capacity)	1.7.54	18′	4′	19′	12′
(2) Ramanath Kaviraj Lane (24000 g.p.h. Capacity)	16.5.26	28′	10′	40′	Level goes down below 45′ the length of air line.
(3) Russa Road South (30000 g.p.h. Capacity)	23.5.58	24′	6′	30′	12′
(4) Russa Road Rail Bridge (24000 g.p.h. Capacity)	in 1954	19′	13′	27′	17′
(5) Nakuleswar Bhattacharjee Lane (24000 g.p.h. Capacity)	in 1955	22′	7′	31′	10′

APPENDIX—IV (*Water Supply*)
ZONE MAINS PRESSURES AT THE ENDS

ZONE	LOCATIONS	PRESSURE
I	Bhupen Bose Avenue	62′
II	Chitpur Spur	35′
III	Wellington Sqr.	40′
IV	Circular Garden Reach Rd. (near Taratala Rd.)	21′
V	Cossipore	70′

P. W. Pressure at the end of Mains :-

District	Section.	LOCATIONS	Pressure.	Size of Mains.
I	A	End of Sovabazar Street.	10′	4″ f. w.
		End of Upper Chitpur Road	10′	4″ ,,
		End of Raja Dinendra Street	8′	4″ ,,
	B	End of Kalakar Street	8′	6″ ,,
		End of Kalikrishna Tagore Street	7′	6″ ,,
		End of Strand Road	4′	4″ ,,
	C	End of Muktaram Babu Street	7′	6″ ,,
		End of Nayanchand Dutt Street	7′	4″ ,,
		End of Masjidbari Street	6′	4″ ,,
	D	End of Amherst Street	12′	5″ ,,
		End of Canal West Road	5′	3″ ,,
		End of Gas Street	8′	4″ ,,
		End of Bechu Chatterjee Street	9′	4″ ,,
II	E	End of Armanian Street	7′	4″ ,,
		Harrison Rd. near Howrah Bridge	4′	4″ ,,
	F	End of Sitaram Ghose Street	8′	4″ ,:
		End of Mirzapur Street	10′	9″ ,,
		End of Sashi Bhusan De St, ...	10′	5″ ,,
		End of Serpentine Lane	10′	4″ ,,
		End of Creek Row	10′	6″ ,,
	G	End of Malanga Park	8′	6″ ,,
		End of Princep Street	4′	6″ ,,
		Opp. High Court	4′	6″ ,,
III	H	End of Alimuddin Street	6′	4″ ,,
		End of Free School Street	7′	4″ ,,
		End of Park Street	9′	6″ ,,
	I	End of Beckbagan Road	11′	6″ ,,
		End of Elliot Road	9′	6″ ,,
		End of Royd Street	9′	4″ ,,
	J	End of Prabhuram Sarkar Lane	5′	4″ ,,
		End of Hughes Road	9′	4″ ,,
		End of Lower Circular Road	12′	9″ ,,
IV	K	End of Rash B. Avenue	6′	4″ ,,
		End of Gariahat Rd. & Rash Behari Avenue.	7′	4″ ,,
		Eed of Lansdowne Road	7′	4″ ,,
		End of Bondel Road	6′	4″ ,,
		End of Ballygunge Circular Road	5′	4″ ,,
	L	End of Harish Mukherjee Road	8′	6″ ,,
		End of Hazra Road	12′	6″ ,,
		End of Kalighat Road	8′	4″ ,,
		End of Harish Chatterjee Street	5′	4″ ,,
		End of Alipore Road	10′	4″ ,,
		End of New Alipore Road	8′	6″ ,,
		End of Chetla Central Road	6′	4″ ,,
	M	End of Diamond Harbour Road and Shapur Road	15′	4″ ,,
		End of Pipe Road near D. H. Road	10′	4″ ,,
		End of Bhukailash Road	5′	4″ ,,
		End of Watgunj Street	5′	4″ ,,
	Cossipore	End of Ratan Babu Road (Riverside)	10′	4″ ,,
		End of B. T. Road	45′	6″ ,,
		End of South Sinthee Road near Dumdum	20′	6″ ,,

APPENDIX V (Water Supply).

Extract from the report of Expert Committee of Engineers appointed by Government of Bengal in 1945—Water Works Deptt., Corporation of Calcutta.

Summary of recommendations for remodelling of the distribution system for filtered water supply.

1. 42″ C. I. gravity main to be converted to pressure main.
2. Additional 54″ main from Palta to Tallah to be laid and provided with venturimeter.
3. A 54″ connection from the New to the Old underground reservoir at Tallah to be effected.
4. One Central Boosting Station to be provided to increase the pressure in zone mains III and IV and to ensure a pressure of 40′ at the consumer's main at the furthest end of the city.
5. A booster station should be built at the Junction of Dharamtolla Street and Circular Road to boost the water in the interconnected zone mains of 45″ and 60″ dia. to 120′ pressure during the hour of maximum supply and 100′ pressure during the hours of medium supply. Three electric pumps of capacity, 1·5 m. g. per hour and 2 of ·6 m. g. per hour should be installed.
6. *Zone I.*—The 24″ dia. "Town Main" and 30″ dia. independent main should be interconnected at Cornwallis street and Beadon St. junction and a 24″ main on Chitpore Road and the 24″ main on Upper Circular Road.
7. The 12″ main should be laid from the extension of Central Avenue along the diagonal road link up with 12″ main on Baghbazar Street.
8. The 18″ main on Ahiritolla Street should be extended upto Nimtolla Ghat Street and Strand Road junction, and linked with the 12″ main.
9. *Zone II.*—An 18″ main should be laid from the 48″ zone main along Amherst Street down to its junction with Bowbazar Street, feeding the 12″ main on Machuabazar Street and the 9″ main on Mirzapore Street on the way.
10. An 18″ main should be laid in Central Avenue fed from the 42″ zone main at Chitpore Square junction and linking with the Bowbazar Street main of 12″ dia. feeding the mains on Mechuabazar Street and Colootola Street on the way.
11. The 18″ main and 12″ main on Bowbazar Street should be connected up at 3 places, *viz.*, junctions of Circular Road, College Street and Ghitpore Road.
12. A 36″ main should be laid to link up the 42″ zone main terminus on Cotton Street and the existing 36″ main in C.I.T. Scheme XIV.
13. From the 42″ main terminus on Cotton Street a 24″ main should be laid along Cotton Street to feed the 12″ main in Clive Street.
14. A new 21″ link main should be laid on Old Court House Street from Bowbazar to Esplanade junction and connected to the 18″ main on Esplanade by a new 18″ link
15. *Zone III.*—A new 12″ dia. main should be laid on Surendranath Banerjee Road from Lower Circular Road junction to Wellesley Street junction to link up the 36″ and 21″ mains running on those roads.
16. A new 18″ main should be laid on Surendranath Banerjee Road from Wellesley to Chowringhee to link with the 12″ main.
17. A new 12″ main should be laid from the 18″ main along Free School Street to Park Street junction.
18. A cross connection should be made between the 60″ zone main and 21″ main at the junction of Park Street and Circular Road.
19. A 30″ main should be laid on Middle Road, Entally, and fed from the 45″ zone main after boosting.
20. From the junction of Middle Road, Entally and Chhatu Babu Lane, an 18″ main should be laid to Palmer Bazar, and a 15″ from there to the end of Chinggre Ghatta Road.
21. An 18″ main should be laid from the new 30″ on Middle Road, Entally, along Darga Road and Kassipara Lane to Park Circus to tie up with that end.
22. A 12″ main should be laid from the above new main on Goora Road np to Mahendra Roy Lane.
23. The 9″ main on Tangra Road should be replaced by a 12″ and extended to Paymental Road.
24. A 12″ main should be laid on Topsia Lane from Tiljala Road.
25. A 21″ main should be laid on Park Street from junction of Wellesley Street to Lower Circular Road.
26. The 36″ and 18″ mains on Wellesley Street should be cross connected at Park Street junction.
27. A 24″ main should be laid on Park Street from Lower Circular Road junction to Park Circus, and extended into Zone IV along Syed Ameer Ali Avenue.
28. *Zone IV.*—A 24″ main should be laid on Syed Ameer Ali Avenue, Old Ballygunge Road, and Hazra Road to connect up with the 39″ subzone main.
29. A 12″ main should be laid along Rifle Road from Dilkhusa Street junction, and along Bondel Road to form a grid with the proposed 24″ main.
30. The 12″ main on Rash Behari Avenue should be extended along Ekdalia Road, Cornfield Road, Swinhoe Street to link up with the main in Gariahat Road.
31. A 12″ main should be laid on Moyerpore Road to link up the 12″ mains on Judge's Court Road and Govinda Addy Road.
32. The 18″ main on Alipore Road should be extended along Tollygunge Circular Road and linked up with the 27″ main on Russa Road. The extension on Russa Road may be of 24″ diameter.
33. A 12″ main should be laid from Ramnath Pal Road and Hemchandra St. junction along the former and on Watgunge St. to improve the existing linkage through a 9″ main.
34. The 42″ subzone main to Kidderpore should be cross connected with the 18″ main on Gora Gacha St. near Brace Bridge.

APPENDIX---VI (Water Supply)
STATEMENT OF BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES DURING THE YEAR 1961-62.

Sample points	Total No. of Samples	Suspicious	Unsatisfactory	Percentage of suspicious & unsatisfactory
Street Hydrant	5422	302	615	17%
House Tap	191	12	73	44.5%
Reserve Tank	48	2	34	75%

APPENDIX---VII (Water Supply)
LIST OF VACANCY IN WATER WORKS DEPARTMENT

Post	Total vacancy	Temp. filled up	Absolute Vacant
1. Dy. Executive Engineer.	1	1	X
2. Supervisor	1	1	X
3. Asstt. T.O. & Ch. Mech.	1	X	1
4. Inspector.	16	X	16
5. Asstt. Engr. (Mech.)	1	X	1
6. Supdt. W.P.S.	1	1	X
7. Asstt. Supdt. W.P.S.	1	1	X
8. Asstt. Supdt. M.G.P.S.	1	1	X
9. Shift Engineer M.G.P.S	4	1	3
10. Superintendent, T.P.S.	1	1	X
11. Asstt. Superintendent, T.P.S.	1	1	X
12. Shift Engineers T.P.S.	2	2	X
13. Shift Engineers P.P.S.	2	X	2
14. Engine Drivers	2	X	2
15 Pipe Layers,	2	2	X

CHAPTER 2

DRAINAGE

Town Drainage

2-1 In April, 1859, the drainage scheme prepared by Mr. Clark, the then Chief Engineer of the Calcutta Corporation, was approved by Government. The scheme consisted of five main sewers, their branches, accessories and outfall works. All the sewers meet at the junction of Dharamtalla Street and Lower Circular Road and then discharge through a main outfall sewer 15´ 6´´x 15´ 9´´ to Palmer's Bridge Pumping Station. Sewage is then pumped into two high-level sewers 8´ and 9´ in diameter and discharge into the open channel at Topsia. The open channel then follows due east and discharges into the two pre-settling tanks at Bantala constructed in the year 1943. Sewage is supposed to be desilted and then discharged into the D.W.F. channel that runs almost parallel to Bhangore canal and falls into river Kulti. The channel is protected with sluices to prevent entry of tidal water into the channel. The storm water channel from Bantala also follows the same route and is also protected with sluices. Sewage and storm water are at present discharged into the river whenever the water level is lower than the water level in the channels.

Suburban Drainage

2-2 In 1889 the areas west of Tolly's Nullah including dock area, Ballygunge-Bhowanipore were included in the jurisdiction of Calcutta Corporation. The area to the west of Tolly's Nullah is drained through brick sewer starting with 24´´ diameter near Kidderpore dock and increasing to 42´´ diameter near Mominpur. The sewage is pumped into a sewer which passes through Judges' Court Road, syphoned below Tolly's Nullah. It meets at the top of 60´´ diameter sewer at Hazra Road which gravitates to Ballygunge pumping station. Another main sewer starts at Tolly's Nullah near Alipur Bridge, gravitates through Kansaripara-Store Road and then to Ballygunge. With the development of Ballygunge area, a large diameter brick sewer starting from Tollys' Nullah at the junction of Rashbehari Avenue goes east, crosses the railway line and finally falls into Ballygunge Pumping Station. Another sewer starting from Moulali junction follows the new C.I.T. Road and meets the sewer in Darga Road and reaches Ballygunge Pumping Station.

2-3 Tollygunge, Cossipore and a large portion of Entally and Tangra which falls on the east of the railway line are unsewered. Sewerage of Manicktollah, though taken up 20 years ago, has made little progress due to war. This area is served by the new pumping station at Dhapa Lock, which was constructed sometime in 1942.

Present State of things

2-4 The ground in Calcutta falls from west to south-east with certain low pockets at the centre like Kalitala-Amherst Street, Badurbagan in the north and Lansdowne Road area on the south.

2-5 The system of drainage is a combined system, *i.e.*, both daily dry weather flow and storm water pass through the same conduit. This system of drainage is defective inasmuch as it is not possible to design a sewer which would have self-cleansing velocity, both with dryweather flow and storm flow. The ratios of storm flow to dry weather flow is 30 : 1. The result is deposition of silt in the sewer. The characteristic of sewer silt of Calcutta is different from what obtains in other cities in the West and even in Indian cities. It consists of a large quantity of inorganic silt contributed by unfiltered water which is used in scouring utensils and by unfiltered water which is used for flushing latrines, and washing streets. The fine silt of unfiltered water, when it comes in contact with sewage which has higher chloride contents than that of filtered water, forms a gelatinous mass having cementing properties.

2-6 As far back as 1891, Baldwin Lathan, the then Sanitary Expert of United Kingdom, advised the Oorporation to adpot the separate system of sewer. This was not heeded. Even now 70 years after the working, by which time the knowledge in sanitary engineering has made revolutionary progress, the combined system of sewage is being adopted for Manicktollah, Cossipore etc. Apart from silting, there is serious difficulty if sewage has to be treated.

Drainage Pumping Stations

(a) Palmer's Bridge P.S.

2-7 Palmer's Bridge Pumping Station is the oldest and the most important pumping station which deals with the most congested and built-up area of Calcutta. There are seven dry weather flow pumps, aggregating a total capacity of 14.53 m.g. per hour or 348.72 m.g. per day. The oldest steam pump was installed in 1929 and the last three in 1938. All the pumps are in a very bad state of repair. The largest pump has been out of order for several years.

2-8 All the pumps should be replaced. This would be obvious from extracts of report of Drainage Engineer as in Appendix I. If that is done, augmentation of D.W.F. pumping station is not at all necessary. The D.W.F. which reaches Palmer's Bridge is about 100 million gallons. Serious consideration of replacement prior to launching into augmentation scheme should be given. The four S.W. pumps are in good condition.

2-9 All the controlling gates are out of action. General maintenance of the station is poor. The gates controlling silt pits have been out of order for years. The depth of silt in the silt pit is 7′ 6″. The average depth of silt in the main outfall sewer is 4′6″.

2-10 Due to accumulation of silt, pumps cannot lower the water level in sewers. This results in sluggish velocity, deposition of silt in sewer and above all sewer cleansing gang cannot enter the sewer and remove the silt effectively.

(b) Ballygunge P. S.

2-11 There are four D.W.F. pumps, 3 electrically-driven and 1 steam-driven. The steam-driven pump was installed in 1906. The pump cannot be worked as boilers are out of action for a considerable period. The total installed capacity is 88.8 m.g.d., as per reports of Drainage Engineer reproduced in Appendix II. The steam pump should be replaced. The station requires augmentation. It is reported, tenders for new pumps were received about two years ago, but were recently discharged.

2-12 There are three storm water pumps having total capacity of 240 m.g.d. These are in good condition. The general condition of the station is satisfactory. The storm water augmentation scheme should be given effect to as early as possible.

2-13 There is a large accumulation of silt in the silt pit. Subsidiary pumping station at Manicktollah should be electrified and pumps replaced.

Brick Sewers

2-14 The inherent defect of the sewerage system in the town area is that due to the flat nature of the ground, the sewers are connected invert to invert instead of soffit to soffit. This results in backing up sewage in subsidiary sewer, resulting in deposition of silt in sewers. Sewers with small cross section areas are the worst affected.

2-15 It is reported that the total length of brick sewers is 92 miles. The total holding capacity of the sewers is 90 lakh cft. It is reported that there is 46 lakh cubic feet of silt which is about 50% of the total capacity. Appendix III shows the heavy silting in the major brick sewers.

2-16 This does not give, however, a correct picture of the state of affairs. There are many small pipe sewers which are choked, *e.g.* sewer in Strand Road, many brick sewers which are more than 70% full. Sewers have to be cleared of silt. More men, equipment and lorries are essential. The silt pits have to be tackled first. Mechanical equipments for cleansing silt have to be adopted. From a report submitted by the Executive Engineer, Drainage, on 13.5.62. to the Corporation, it appears that the total accumulation of silt in the sewers as revealed by a survey in March, 1962 was 46.01 lakh cft. compared with 20.88 lakh cft. found in another survey in 1951. Thus, silt is accumulating at a rate faster than being removed. There is, therefore, danger looming ahead if removal is not equal to annual accumulation and the backlog is not reduced. The Executive Engineer has submitted a three-year programme to remove 30 lakh cft. of accumulated silt by manual labour at a total cost of 17·30 lakhs. The Corporation is considering this proposal. In our opinion, there is no satisfactory alternative to employment of manual labour to tackle this past accumulation. The question of using some kind of mechanical means will take time to solve, but, in the meantime, the present state of affairs cannot be allowed to continue without serious risk to the drainage of the town.

2-17 Cleansing of public sewer and cleansing of brick sewer are the responsibility of two different departments, *viz.* District Engineers' Department and the Drainage Engineer's Department respectively. This is not conducive to efficient working. Cleansing of both pipe sewer and brick sewer should be the responsibility of one Department, preferably that of the Drainage Engineer's Department which is responsible for the maintenance of sewerage system in general. It is to be noted that unless brick sewers are cleansed, it is difficult to cleanse the public sewers.

Sedimentation tanks at Bantala

2-18 The sedimentation tanks constructed in 1943 have been out of action for years. The two tanks are in a state of disrepair and are on the point of collapse. The cost of two such tanks at the present market rate would be Rs. 30 to 35 lakhs.

2-19 At one time it was decided that Goverment in the Irrigation Department would assume the responsibility of maintaining the sedimentation tanks and the channels from Bantala onwards to Kulti. This issue has to be finalised without delay. It appears that it is nobody's business now to maintain this very important component of the drainage system, which is vital to the efficient working of Calcutta's sewerage system.

Cossipore Drainage

2-20 The area is unsewered, but the waste water, which is septic in character, is pumped at Birpara and near Krishnapur canal. Discharge from Birpara pumping station is carried into the newly excavated Bagjola canal. The discharge of this waste water has created most awful nuisance which beggars description. Two open drains on both sides of Jessore Road lead to the Krishnapur canal pumping station. The nuisance created here is also terrible.

2-21 The Irrigation Department is constructing a full-treatment plant in connection with their Salt Lake Reclamation Scheme. The discharge from the Birpara pumping station and the two *nikashis* along Jessore Road should be led to the new sewage treatment plant through covered conduit, otherwise the full benefit of the very expensive treatment plant will not accrue.

Supervisory control and spare parts

2-22 The department is under-staffed and there is a large number of vacancies in the key posts. Appendix IV shows the existing vacancies in the Drainage Department. Permanent measures should be taken to fill up these vacancies. The position regarding maintenance and spare parts is the same as obtains elsewhere in the Corporation. It is felt that for maintenance of the pumping installations of both the Drainage and the Water Supply Departments, it is desirable that there should be a qualified Mechanical Engineer in charge of the pumps and installations of both. We, therefore, recommend that the post of a senior Mechanical Engineering of the rank of an Executive Engineer be created to look after the equipments of both the departments.

2-23 Our recommendations are as follows :—

(i) All the pumps at Palmer's Bridge P.S. should be replaced.

(ii) All the controlling gates at Palmer's Bridge P. S. should be put into commission.

(iii) The steam driven pump installed in 1906 should be replaced.

(iv) Implementation of the augmentation schemes already approved should be expedited.

(v) Accumulated silt in the silt pits should be removed.

(vi) The Subsidiary Pumping Station at Manicktala should be electrified and pumps replaced.

(vii) Mechanical equipment for clearing silt will have to be eventually adopted. Pending that, more men, more money and more equipment should be provided for clearance and removal of silt from the sewers by manual operation. In this connection, the three-year programme recently submitted by Executive Engineer, Drainage, deserves serious consideration.

(viii) Cleansing of all sewers, pipes, drains etc. should be under one unified control, preferably under the control of Executive Engineer, Drainage.

(ix) Taking over of the entire outfall system by Government should be finalised without delay and the Sedimentation Tanks at Bantala should be brought into proper use.

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APPENDIX—III (*Drainage*)

Average depth of silt deposited in some of the major sewers

		Size of sewers	Av. depth of silt
1.	Sovabazar & Grey Street. Sewer	6′-6″ x 4′-0″ to 8′-1″ x 6′-3″	3′-0″
2.	Beadon Street	8′-1″ x 6′-3″	4′-0″
3.	Kalutola Street	8′-1″ x 6′-3″	3′-0″
4.	Dharmatala Street	8′-1″ x 6′-3″	4′-0″
5.	Upper Circular Road	4′-0″ x 2′-8″ to 9′-4 1/2″ x 7′-3″	4′-0″
6.	Lower Circular Road	8′-1″ x 6′-3″ to 9′-4 1/2″ x 7′-3″	4′-7″
7.	Raja Dinendra Street	2′-9″ x 1″-10″to 10′-0″ x 8′-0″	4′.0″
8.	Canal West Road	7′-0″ x 10′-6″ dia	1′-0″
9.	Vivekananda Road	3′-2″ to 3 -6″ dia & 5′-9″ x 3′-4″ to 7′-0″ x 4′-0″	1′-0″
10.	Town Outfall sewer	20′-4″ x 15′-3″	4′-6″
11.	New C.I.T. Road from Moulali to Darga Road	5′-6″ to 6′-6″ dia	4′-3″
12.	Dilkhusa Street	5′-0″ to 8″-6″ dia	4′-5″
13.	Samsul Huda Road	4′-9″ dia	2′-6′
14.	Gurusaday Dutt Road-Ballygunge Park Road	5′-0″ to 7′-0″ dia	2′-3″
15.	Hazra Road—Broad Street	6′-6″ to 7′-0″ dia	3′-3″
16.	Rash Behari Avenue	7′-0″ to 10″-0″ dia	4′-8″
17.	Padda Pukur Road—Chakraberia Road	2′-6″ to 6′-6″ dia	2′-0″
18.	Judges' Court Road	4″-0″ to 5′-0″ dia	2′-0″
19.	Bowbazar Street	3′-6″ x 2′-4″ to 6′-0″ x 4′-0″	2′-4″
20.	Machua Bazar Street	3′-2″ x 4′-3″ to 5′-9″ x 5′-3″	1′-11″

APPENDIX—IV (Drainage)

VACANCIES IN THE SUPERVISING POSTS UNDER DRAINAGE DEPARTMENT

Posts Lying absolutely vacant.

1. Dy. Executive Engineer, Drainage.
2. Resident Engineer, Drainage (the post kept in abeyance by Corporation resolution dated 26.9.62.
3. Outfall Engineer.
4. Manager, P. S. Tanks.
5. Superintendent, Dhappa Lock P.S.
6. Asstt. Engineer-in-charge, Sewer Cleansing (newly created).
7. Shift Engineer, P.S. Tank.
8. Chargeman, M.M.P.S.
9. Outfall Supervisor.

Posts temporarily filled up.

1. Executive Engineer, Drainage.
2. Asstt. Engineer, Mechanical, P.B.P.S.
3. Asstt. Superintendent, B.D.P.S.
4. Asstt. Superintendent, Dhappa Lock P.S.

Pay Scale of the categories where vacancies exists.

	Rs.
1. Executive Engineer, Drainage	800-40-1200
2. Dy. Executive Engineer, Drainage	600-25-700-30-850
3. Resident Engineer, -do-	400-20-500-25-700
4. Asstt. Engineer, Drainage.	300-20-500-25-600
5. Asstt. Engineer-in-charge, Sewer Cleansing	300-20-500-25-600
6. Superintendent, Dhapa Lock Post	250-500
7. Asstt. Supdt., Dhapa Lock P.S.	200-10-290-15-350
8. Asstt. Engineer, Mechanical, P.B.P.S.	300-20-500-25-600
9. Asstt. Superintendent, B.D.P.S.	200-10-290-15-350
10. Chargeman, M.M.P.S.	60-4-80-5-120
11. Outfall Engineer	400-20-500-25-700
12. Outfall Supervisor	200-10-300-15-450
13. Manager, P.S. Tank	300-10-400
14. Shift Engineer, P.S. Tanks	125-275

CHAPTER 3

Conservancy Service

3-1 The conservancy service generally consists of (1) surface cleansing of streets, lanes, side-walks and the removal and disposal of domestic and trade refuse, (2) collection, removal and disposal of nightsoil from service privies, and sludge from septic tanks etc. This service is administered, as many other services, district-wise, *i.e.* under four separate districts. General informations about districts, population, quantities of refuse, etc. are given in Appendix I, while Appendix II shows the position of vehicles employed for garbage removal. A very small part of garbage removal is still done by animal-drawn carts (mostly in Tollygunge area) but, for all purposes, the garbage removal service can be taken as fully mechanised.

3-2 It is an admitted fact that collection and removal of garbage in Calcutta at present is far from satisfactory. The deficiencies in this very important civic service stem mainly from :-

(a) shortage of serviceable vehicles,

(b) unsatisfactory conditions in disposal arrangements,

(c) shortage of supervisory staff, labour and equipment,

(d) organisational inadequacies.

These factors are dealt with in the following paragraphs :-

(a) shortage of serviceable vehicles,

3-3 This is mainly due to the following reasons :-

(i) Lack of facilites for daily, weekly and preventive maintenance and for attending timely to minor repairs ;

(ii) inadequate arrangement for major repairs and overhaul ;

(iii) irregular replacement of old and worn-out vehicles.

In this connection, reference may be made to our detailed report and recommendations on the working of the Motor Vehicles Department in another chapter.

(b) Unsatisfactory conditions in disposal arrangements,

3-4 The normal method of disposal is by dumping at Dhapa. The refuse vehicles go to the refuse-loading platform where the refuse is transferred to railway wagons, transported to Dhapa and unloaded from the wagons and dumped by the Corporation lessee. Due to very unsatisfactory condition of the locomotives, quantity of refuse hauled by the Municipal railway to Dhapa has very much decreased. Alternative disposal arrangement is to divert the refuse vehicle direct to various dumping grounds such as at Bantala, Kadapara, Dhapa, etc., where the refuse is dumped straight from the vehicles. Roads leading to these dumping grounds are usually unsatisfactory and dumping conditions are also very bad. This causes heavy strain on the refuse vehicles as also a much longer haulage increasing both the time of removal as also unusually heavy wear and tear of the vehicles. Breakdown on road is about 15% on the average due to bad maintenance, long haulage and bad conditions of roads and dumping grounds. According to agreement, the lessee is to unload 115 wagons daily free of charge. During 1950-53, an average of 90 to 95 wagon-loads of refuse had been hauled daily by Municipal railway, but this came down to about 65 during 1958-61, present condition remaining almost the same. Conditions at the various dumping grounds have been extensively dealt with in some recent inspection reports (Appendices III & IV).

(c) Shortage of supervisory staff, labour and equipment.

3-5 The collection of refuse is done primarily under two systems :--- (1) house-to-house collection, (2) direct collection from bins or vats or dumps on the roadside. Even in areas where house-to-house collection is practised, street sweepings are gathered and placed in dumps or bins on the roadside for removal. Bins and containers, which used to be a regular feature in the past, are mostly absent in many quarters with the result that refuse is thrown everywhere. Refuse is scattered by animals, crows, rag-pickers, etc. and creates terrible nuisance and gives unsightly appearance.

3-6 For the purpose of conservancy, each district has been divided into several Blocks. There is one Block Sarkar for each Block who supervises the conservancy work in the Block with the help of different categories of majdoors. The Blook Sarkar's working hours are from 5-30 A.M. to 9-30 A M. and again from 2-30 P.M. to 5-30 P.M. Thus, the Block Sarkar is absent between 9-30 A.M. to 2-30 P.M. The removal of garbage, however, starts from 6 A.M. in the morning and goes on upto 1 P.M. usually, sometimes even upto 2 P.M. Thus, there is no supervision over the lorry majdoors after 9-30 A.M. which may be responsible for less numbers of trips or partial loading of the refuse lorries. Generally, a number of 10% to 20% of the scheduled trips are not made for above reasons. Since some time back the majdoors have been enjoying one day's weekly leave. Thus, 1/6th of the total majdoor staff is absent everyday in the week. This also affects the efficiency of removal, particularly in areas where house-to-house collection system has been introduced. It is reported by District Engineers that the number of Block majdoors who are responsible for collection of the garbage from streets and houses and dumping them in the roadside bins or vats is also inadequate in most of the districts. Besides, equipments available are also inadequate. More cleansing equipments like grooms, wheel-barrows, handcarts-etc. are necessary for satisfactory and speedy collection. It is to be noted that unless the collection is satisfactory, the refuse lorry cannot work efficiently as it cannot make full-load trip in time.

3-7 Generally, the present strength of service in the 'added' areas is inadequate in relation to the present area and population. Also, some extra services are necessary in some of the districts. A minimal casual assessment of the extra services necessary has been indicated in Appendix V. This should be further examined and services increased accordingly.

3-8 Collection and removal of nightsoil, though not strictly connected with garbage removal, is nevertheless an important sanitary service and is particularly important in the 'added' areas. Tankers for removal of nightsoil are not desirable since the pails have to be kept on the roadsides until the tanker arrives. This often leads to the very dangerous practice of dumping the pails nearby. Nightsoil service should be operated by only tractors and trailers. At least four more tractors along with the requisite number of trailers (preferably 30 trawlers of 150 gallon capacity) should be immediately purchased. The present strength of *methors* and mates is also inadequate. More staff should be appointed as early as possible.

3-9 The Committee feel that Block majdoors, Lorry majdoors, drivers and other staff connected with the collection, transport and final disposal of refuse are completely out of control. Chaotic situation has been created further after the weekly holidays have been granted to all kinds of Corporation workers. From time to time, negotiations have been made with the majdoors and respective unions to find a workable solution. Corporation has conceded to grant an allowance of Rs. 4/- per majdoor per month on condition that the work would be managed with the existing staff. We have found that the agreement has not produced the desired results. It is recommended that the overall requirement of labour should be carefully assessed after providing for one day's weekly rest.

There is also acute shortage of adequate intermediate and supervisory staff in both the Moter Vehicle Department and the District Engineer's Department.

(d) Organisational inadequacies.

3-10 Power to take disciplinary action is very limited and whenever an attempt is made to tighten the organisation, there is resistance all down the line from labourers and other quarters, including threat of stoppage of work. Neither the officers nor the Corporation are willing to face the issue squarely. The policy of hesitation and drift has gone too far and there is an absence of a sense of team work and responsibility and cohesion in the organisation.

3-11 We have noticed the undesirable consequences of the dual nature of administration of the conservancy service. The Lorry drivers are controlled by the Garage Foremen and are part of the Motor Vehicles establishment, while the Block Sarkars and Block majdoors are in the District Engineers establishment. Formerly, the Lorry majdoors also belonged to the Motor Vehicles Department, but since 1956 they have been transferred and placed under the District Engineers. This has been effected, however, only theoretically, since in most cases, their attendance is maintained by the Garage Foremen and their pay bills are drawn by them. The matter has been under dispute since 1956. The Lorry drivers and the Lorry majdoors being staff of two different departments, the responsibility is often shifted by one department to the other. Usually the Lorry drivers apportion the blame on to the Lorry majdoors while the Lorry majdoors allege unsatisfactory work by the Lorry drivers.

3-12 Final disposal of garbage consists of operation in three stages :---(1) collection, (2) transportation, and (3) final disposal. Unless these three stages of operation are geared together, failure in one stage of operation will upset the whole system. This is obvious and needs no elaboration under the dual or rather treble control system (District Engineers, Motor Vehicles Superintendent and Traffic Superintendent of the Railway Department), efficient services cannot be expected. For maintaining the service at a high standard, a thorough reorganisation of the conservancy service and particularly the Motor Vehicles Department is necessary. This does not seem to have been attempted seriously in the past, although various reports on the subject have been submitted from time to time. The whole service should be under unitary control.

3-13 Extension of garage facilities regarding space, staff and equipments would be one of the most important factors of the reorganisation of the entire system. The present garage in District IV is located almost at one extremity of the district and this imposes a long haulage of refuse lorries. Preferably, a second garage should be opened in the eastern areas (near Bondel Road-Tiljala area) to shorten the haulage. The dumping grounds should be brought under the control of the same officer who would be responsible for maintaining them in proper shape.

3-14 Purchase of more locomotives, bull-dozers, etc. would be necessary within a short time. Normal maintenance of railway track and wagons should be stepped up to clear up any backlog. The economics of disposal by direct dumping in place of transferring to wagons and then transporting the same to the dumping grounds by wagons ought to be studied.

3-15 As has been already stated, there is acute shortage of adequate intermediate and high-level supervisory staff. Supervisory staff of proper qualifications and calibre should be appointed. Service conditions including existing pay scales of different categories of staff need thorough appraisal and re-orientation at a level comparable to the present pay scales in Government service, in order to attract really efficient men. It is to be noted that service conditions, emoluments and appreciation of work—all go to develop the morale of the service. Most of the Corporation employees are engaged in essential public utility services, where one cannot afford the morale of the service to come down, which has been a fact since quite some time back.

RECOMMENDATIONS :

3-16 With a view to bring about substantial improvement in the service, the following measures are suggested :---

1. The District Engineers should be in overall charge of conservancy operation in the district, but he should be assisted by an Assistant Engineer exclusively for conservancy work. Existing conservancy staff should be under the direct control of the Assistant Engineers. Lorry drivers and majdoors, though attached to the Motor Vehicles Department, should be under the disciplinary control of the District Engineer while working within the district outside the garage.

2. There should be a Deputy Commissioner at Headquarters in overall charge of the conservancy service in general, including Motor Vehicles Department, Municipal railway, disposal grounds and, he will plan the operation. In this respect, the District Engineers will be under him. In this scheme of things, the Deputy Chief Engineer should be replaced by a properly qualified Mechanical Engineer with workshop and automobile experience, who will be in direct charge of the Motor Vehicles Department, Municipal railway and Entally Workshop.

3. A regular afternoon service should be organised for removal of garbage in heavy accummulation areas.

4. Bins or vats should be provided at all lorry collection points. This should be as inconspicuous as possible.

5. The working hours of Block Sarkars should be modified to permit supervision of both morning and afternoon services.

6. The question of removal of garbage by mechanised means should be explored.

7. A portion of Tollygunge area is still served by animal-drawn carts. This should be immediately replaced by mechanised services.

8. So far as Municipal railways are concerned, two locomotives should be hired, if possible, so that a daily average of 100 wagons can be transported to Dhapa. There should be arrangement for installation of softening plant for softening boiler-fed water for the locomotives.

9. There should be installation of weigh-bridges at the different Municipal dumping grounds and appointment of responsible supervisory officers, so that the quantity of refuse removed by the lorries can be properly checked and assessed.

10. So far as dumping grounds are concerned, it appears that Dhapa Square Mile is the principal dumping ground. Arrangments should be made with the lessee in advance so that adequate area is made available for dumping, both directly and through lessee's labour. A planned approach should be made to recover possession of the encroached lands at Dhapa. The lessee should also provide certain basic amenities for its workers, as for instance, better housing and safe water supply. The lessee should also take proper steps for improving the working of his own majdoors. If there be any difficulty on that point, action should be taken for immediate hiring or purchase of two bull-dozers in order to shift and spread the refuse properly. Bantala dumping ground is too far away to take the refuse from District IV. Land nearer Topsia either in the Northern or Southern Salt Lakes should be acquired. Kadapara dumping ground has been practically fully utilised. The refuse dump is about 30 ft. above ground level. This area should be levelled and the spoil should be used for filling the low lands in Manicktola area. After levelling, the site may be used for building purposes. Area near Noapara dumping ground should be acquired. Low area on the south beyond South Suburban Municipality should be acquired.

11. All the roads leading to the various dumping grounds should be thoroughly improved in order to facilitate transport and also to save the life of the lorries.

12. There should be provision for adequate lighting arrangements at the dumping grounds. Otherwise, it will be difficult to carry on afternoon service.

13. As dumping is the cheapest method for final disposal of garbage, as much low land as available on the south and in the east should be acquired so that refuse could be disposed of for at least next 50 years.

14. Enforcement of Corporation bye-laws should be done more vigorously with the help of the Police, if necessary, and in this regard, closer co-ordination with the Police will be necessary.

15. If the City has to be kept clean, co-operation of the citizens is of maximum importance. Indiscriminate throwing of garbage at all hours of the day at all places creates enormous problems for the Administration. Voluntary Organisations, Social Workers, teachers of Primary schools under the leadership of respective Councillors etc. should persuade the public to help the Administration by depositing refuse at the proper place and in proper time. The Publicity Department of the Corporation should take this up and educate the public.

APPENDIX—I (Conservancy Service)

District	Area in acres.	Wards.	Population	Estimated daily refuse.	Dumping grounds.	Average Haulage per trip.
1	2	3	4	5	6	7
I (including Cossipore)	4,009	1-14, 17-22 24-25, 28-29 32	8,46,639	650 Ton	Noapara for Cossipore Area Kadapara, Dhapa [District proper	5-10 miles 10-15 miles.
II (including Manicktola)	3,823	15-16, 23, 26-27, 30-31 33-46	6,29,705	500 Ton	Kadapara for Manicktola Area Dhapa, Bantala [District proper	10-15 miles.
III	4,285	47-60	4,89,636	400 Ton	Dhapa Bantala	8-15 miles.
IV	11,503	61-80	8,45,462	450 Ton	Bantala Dhapa	20 miles.
					Local Dumping grounds for area Tollygunge	5-10 miles.

Total Estimated daily refuse....	1,950 Tons
Say....	2,000 Tons

APPENDIX—II (Conservancy Service)

(Figures as on 1. 5. 62)

(*A*) ***Type of Vehicles or Equipments***

		Total No.
(1)	Lorries with integral body (including one Weapon Carrier)	468
(2)	Mechanical Horses	3
(3)	Tractors	30
(4)	Bull Dozer	2
	Total.	503
	Trailers.	176

(*B*) ***Disposition of Vehicles and Equipments as on 1. 5. 62.***

	No. of Vehicles run	*No. of Vehicles laid up*	*Total.*
District I.	54	77	131
,, II.	58	46	104
,, III.	70	68	138
,, IV.	60	70	130
Total.	242	261	503

APPENDIX---III (Conservancy Service)

Inspection Report of the Transfer Platform at Dhapa

This morning at 11-30 A. M., Dr. Arch Dotson, Mr. Milton Kaplan of Ford Foundatiou and myself inspected the transfer loading platform at Dhapa. During our inspection the road was blocked and we went by another road. We also noticed that a small tank is being filled with refuse. Indiscriminate dumping of refuse without any control measures has created a condition which can hardly be believed unless one sees it.

The fly population is very high. The people living around the area complained of same. I gathered from the discussion and records of the Officer-in-Charge of the Platform that the following number of trips were made by lorries during the past 9 days.

The figures are given below :-

Date	*Platform*	*Trenching ground*
19th	247	32
20th	247	28
21st	265	21
22nd	295	27
23rd	96	107
24th	231	26
25th	241	31
26th	234	28
27th	258	19

TOPSIA

We went to another point. Some lorries from all the Districts carry the refuse and dump the same along the road from Topsia to Bantala.

The number of lorries and trips are given below :-

Date	*Lorries*	*Total number of trips.*
19th	71	138
20th	84	146
21st	74	135
22th	74	141
23th	87	180
24th	86	139
25th	84	147
26th	72	136
27th	74	139

Besides these two places for disposal for refuse, there are two other dumping grounds (i) Noapara for District I and (ii) Kadapara in Manicktala area.

I am told the number of trips for these dumping grounds are few and altogether would be 35 or so. The exact number of lorries used at Dhapa and Topsia points could not be ascertained as the same lorry may work on the same day at two different points, and/or the same lorry may work in the morning shift as well as the evening shifts. The refuse which is transferred from lorries to wagons is taken to Dhapa by Corporation's Locomotives. The Corporation have their own railway line. At the disposal point the Lessee of the Square Mile is supposed to unload them and return the empties back to platform sites.

Disposal of refuse by wagons to Dhapa

The number of wagons transported from the year 1950-51 to 1960-61 are given below :

Year	No of Wagon
1950-51	32,772
1951-52	34,617
1952-53	33,219
1953-54	35,589
1954-55	33,729
1955-56	31,428
1956-57	28,177
1957-58	27,242
1958-59	24,965
1959-60	29,739
1960-61	24,595
1961-62 (upto 31st May)	4,727

We gathered that previously about 100 wagons used to be despatched to the Dhapa Area, The capacity of each wagon given by the Officer-in-Charge, is 10-12 tons.

Difficulties in Operation

We also gathered that the total strength of wagons is 327 of which only 195 wagons are in commission. The condition of wheels and axles of the 60 per cent of wagons in commission are in a bad state with the result that there is frequent de-railment of wagons.

We gathered that 4 (four) Locomotives were purchased about 4 years back. These Locomotives are provided with steel fire box and these have been giving trouble since 1960.

We understand that tubewell water is being used for raising steam. The water is hard and as such there is heavy incrustation in the boiler tube. There is frequent leakage of steam tube. The total requirement of water as stated by the Officer-in-Charge is 7200 gallons. The other Locomotives which they have, have been laid up for repairs. 3 Locomotives are required daily for conservancy work and 1 for transport of ballast.

On the day of inspection we are told that one of the new Locomotives had to be laid up at 10-30 A.M. due to leakage in the main steam pipe. In case of another Locomotive, leak was also noticed and they did not think that Locomotive will work for more than a couple of hours. They would be left with only one Locomotive to carry on duties of 3 Locomotives. Their normal requirements are 4 Locomotives and 2 stand-by. The Locomotives should be of dependable nature so that when they come out to work, there is no sudden break-down.

The Officer-in-Charge explained that there is serious trouble at the disposal point as the lessee's mazdoors are not working according to the terms of agreement : they are supposed to carry *i.e.*, unload the wagons to a distance of about 100′ ft from the railway line and gradually fill up the place. But what they are doing now is that they are dumping the refuse just behind the side of railway line and the railway line is getting blocked and they cannot attend the branch line with the result that the disposal of refuse is taking much longer time and he apprehends that unless immediate arrangement is made, there would be a complete breakdown in the disposal of refuse. A large number of lessee's mazdoors were present while we were inspecting the platform site. They wanted to have an interview with us. We asked them to select a leader and tell us their grievances. Their workman said that previously they used to get Rs 1/8 for unloading a wagon. From 1st of June they have been given Rs. 3/- per wagon. They are not satisfied with that and if they have to work according to specification *i.e.*, carry load to a distance of 100′, they should get Rs. 5/- for unloading each wagon which the lessee gets. I could not follow what he means by "which the lessee gets". The lessee is supposed to do this work free of cost in lieu of the right to cultivate the reclaimed land. They also complained of bad housing, absence of medical service, scarcity of water and absence of primary school. They requested that we should look to their grievances and make suitable recommendations for ameliorating their living conditions.

The Officer-in-Charge is of opinion that the transport by wagons is failing and is likely to fail completely due to the attitude of the lessee's workers.

He thinks that road to Dhapa Square Mile should be properly maintained so that lorry can be taken there. He further stated that 100 acres of land along the main road should be taken back from the lessee for direct dumping. He also emphasised the need for another Bull-Dozer.

Sd. P. C. Bose
Executive Director
&
Chief Engineer,
Calcutta Metropolitan Planning Organisation.

APPENDIX—IV (Conservancy Service)

Inspection Report

We inspected the other two dumping grounds of Corporation of Calcutta--one is known as Kadapara in Manicktala and the other is Noapara in Barrangar area. The Kadapara dumping ground is situated in Narikeldanga Main Road opposite to the new Lake excavated by Calcutta Improvement Trust. This area used to be the old trenching ground area of Manicktala when Manicktala was a separate municipal entity. I am told that for the last few years the garbage of a portion of District--I, and that of Manicktala are being dumped in this area. One refuse dump to a height of 40′ has been created here. The figures giving the number of lorries and number of trips from different districts are enclosed herewith (vide Table 1). The Noapara trenching ground deals with the refuse and night soil of Cossipore area. The number of lorries used and trips made are given in Table 2 enclosed.

* * *

* * *

To cope with the difficulties experienced at the disposal ground, 6 Bull Dozers are the minimum requirement. The Corporation of Calcutta has only one in good condition and two others are small and at present out of commission. We are not sure whether they could be overhauled. The 4 nos. of Locomotives which were purchased 4 years ago have steel fire boxes. These are giving constant trouble due to use of hard water. Fire boxes of these Locomotives will have to be gradually changed one by one as the number of reliable Locomotives available are few. It is not possible to repair or replace 4 fire boxes simultaneously. The Corporation of Calcutta should get on hire or loan and gradually replace the 4 fire boxes in the meantime. However, all the trouble is due to use of hard water. A softening plant should immediately be put up. The tubewell water should be softened and then used in the Locomotives. Acquisition of fresh dumping area should be made both in Dhapa and Noapara. The disposal of refuse near the city limits should be discontinued and should only be done in case of extreme emergency by "Controlled dumping system".

Sd. P. C. Bose
Executive Director
&
Chief Engineer,
Calcutta Metropolitan Planning Organisation.

TABLE 1. (*Conservancy*)

JUNE	KADAPARA				MANICKTALA	
	DISTRICT - I		DISTRICT - II			
	Lorry	Trip	Lorry	Trip	Lorry	Trip
19th	2	2	X	X	3	10
20th	4	4	1	3	4	12
21st	1	3	X	X	3	12
22nd	X	X	1	1	3	11
23rd	2	2	2	6	4	12
24th	2	6	X	X	2	3
25th	2	4	1	3	2	8
26th	4	8	1	1	1	4
27th	3	6	X	X	2	4
28th	3	7	2	8	1	4
29th	4	10	1	1	5	18
30th	3	8	1	1	9	22
JULY						
1st	7	18	X	X	7	16
2nd	10	26	X	2	10	29

TABLE 2. (*Conservancy*)

JUNE	GARBAGE		NIGHT SOIL		CONSERVANCY		
	Lorries	Trips	Lorries	Trips	Transit	Lorries	Trips
19th	4	8	7	10	8	2	6
20th	6	6	6	11	7	2	8
21st	4	9	4	7	7	1	4
22nd	4	8	5	10	7	2	8
23rd	4	8	5	7	8	2	9
24th	6	12	5	10	8	2	8
25th	5	11	5	9	8	2	8
25th	5	8	5	9	8	2	8
27th	7	10	5	10	8	X	X
28th	6	13	5	10	8	2	8
29th	5	11	5	10	8	2	8
30th	6	11	5	10	8	2	8
JULY							
1st	5	13	5	10	7	2	8
2nd	6	11	5	10	7	2	8
3rd	5	9	5	10	7	2	8

APPENDIX—V (*Conservancy Service*)

Assessment of extra services necessary.

District	Existing permanent services.	No. of vehicles required for existing permanent services with 15 per cent stand-by	Recommended extra services	No. of vehicles required to include recommended extra services with 15 per cent stand-by.
I.	67	77	4 for Cossipore 7 for District proper	90
II	59	68	2	70
III	50	58	3 (now serviced on alternate day)	61
IV	60	69	4 for Tollygunge 3 for District proper	79
Total	236	272	23	300

CHAPTER 4

Motor Vehicles Department and Municipal Railway

4-1 The Corporation owns a large fleet of lorries and tractors for conservancy work mainly. There are also a number of cars and ambulances, but these latter have not been considered in this review. The success of its conservancy services depends largely on the efficiency of its transport fleet. Inspite of having a big fleet of its own, the Corporation has been compelled to hire a large number of outside lorries as the Motor Vehicles Department has failed to maintain a sufficient number of vehicles in road-worthy condition. At the request of the Committee, the working of the Motor Vehicles Department has been examined by Shri M. K. Mukherjee, a senior Service Engineer of Calcutta State Transport Corporation. His report, a copy of which is enclosed as an annexure (Vide Vol II of the Report) shows that the condition of the Corporation Motor Garages and workshop is most deplorable and there is no proper system of maintenance and repair of the vehicles and for want of routine maintenance more than half the fleet are lying out of commission. That such a situation has arisen is a condemnation of the Department.

4-2 The tolal fleet of lorries and tractors on 1.5.62 was as follows :-

Lorries	... ...	468
Tractors	... ...	30
Mechanical horses	...	3
Bull-dozers	... ...	2
Total	...	503
Trailers	....	176

136 of these vehicles belong to the period of 1951 and earlier years and 367 have been purchased between 1953 and 1961. Out of the first lot, 75 vehicles have been off the road for more than 6 months and are beyond economic repair. 102 vehicles out of the second lot, have been lying idle for more than 6 months, but they can be repaired and put back into service. In addition to these, 177 vehicles lying out of commission for 6 months or more there are 82 vehicles lying idle for less than 6 months and all of them can be made serviceable again. Thus, out of a fleet of 503 lorries, tractors etc., only 242 were in a serviceable condition on 1.5.62. If 75 of the 1951 and earlier vehicles which have reduced to scrap are omitted, it will be seen that out of 428 vehicles which should be in a serviceable condition, only 242 were in running condition. The percentage of idle vehicles is too high considering the daily mileage (40 miles or so) they are required to run. Out of 102 vehicles of the post-1951 period which were lying idle for 6 months or more, most of them had not covered 50,000 miles (one had covered 79,000 miles and another 52,000 miles); thus except perhaps one vehicle which has run 79,000 miles, none of these vehicles were normally due even for the first major overhaul. The Corporation has been purchasing new vehicles every year since 1958; the number of vehicles purchased in different years was :-

1953	...	30
1954	...	7
1955	...	30
1956	...	71
1957	...	121
1958	...	43
1959	...	11
1960	...	46
1961	...	8
		367

This year also Corporation has purchased 40 vehicles.

4-3 It is sad to find that out of the vehicles purchased within 5 to 6 years, 19 Bedfords out of 64 of 1959-61, 16 Studebakers out of 70 of 1956-1958 and 14 Mercedes Benz out of 62 of 1956-58 have been lying out of commission for over 6 months. The Corporation has been spending considerable amount every year for purchase of vehicles without perhaps enquiring what was happening to the vehicles which had been purchased already. The amount spent annually for running the department is Rs. 20 lakhs or a little more. The whole position shows a lamentable state of neglect and inefficiency and waste of public funds.

4-4 The garages are without modern servicing facilities and the Central Workshop is run with obsolete equipments. The staff is mostly poorly qualified and they have little knowledge of maintenance of diesel engines and diesel vehicles. The post of Assistant Superintendent, Works, who is in charge of the Central Workshop has been lying vacant for over a year; one post out of two senior Foremen there is also vacant. There are 4 garages. They are normally under the charge of a Garage Foreman on Rs. 150-350 who is hardly the proper agency for such a responsible Job. In 2 Depots, even the post of Foreman is vacant and the charge is held by Asstt. Garage Foreman on Rs. 100-240. Consumption of spare parts is higher per mile than in the State Transport where the vehicles have to do much longer mileage and more arduous job every day. There is hardly any stores organisation without which a big fleet cannot be effectively maintained. There seems to be little control over the movement of vehicles or their outside work as will appear from the following statement showing the average load of garbage carried by the conservancy vehicles as recorded at the weighbridge at Dhapa on 13.6.62, 15.6.62 and 18.6.62.

Payload of the vehicles	District	Average load carried per vehicle on 13.6.62.	Average load carried per vehicle on 15.6.62.	Average load carried per vehicle on 18.6.62.
5-ton vehicle	I	3.35 ton	3.1 ton	3.6 ton
	II	3 ,,	3.1 ,,	3,1 ,,
	III	3.1 ,,	3.2 ,,	3 ,,
4-ton vehicle	I	3.1 ,,	3.7 ,,	3.6 ,,
	II	2.6 ,,	1.5 ,,	x
	III	1.8 ,,	2.3 ,,	2.2 ,,
3-ton vehicle	I	3 ,,	3 ,,	2.9 ,,
	II	2.9 ,,	2.4 ,,	2.5 ,,
	III	2.2 ,,	2.2 ,,	2.0 ,,

Thus it makes no difference to the staff responsible for collection of garbage and its disposal, whether it is a 3-ton or 4-ton or 5-ton lorry and the performance in some cases was shockingly below the average. The condition of the Municipal Railway is also deplorable as most of the locomotives cannot do the work.

4-5 It is therefore imperative that there should be tightening of control over the work of the staff inside and outside the depots. The Conservancy Department should be placed under the overall charge of a senior officer of the rank of Deputy Commissioner with full power over the staff. He may be designated as Director of Cleansing. The work of street collection of refuse, loading in the lorries and disposal at the dumping grounds as well as control of the Municipal Railway should be in the overall charge of this officer. The Motor Vehicles Department should also be placed under his charge. For this department there should be a qualified Automobile Engineer in overall charge; the depots should have a properly trained Assistant Engineer or a senior qualified Foreman, if an Assistant Engineer is not available, as Garage Superintendent, who should be responsible for proper maintenance of the vehicles. A scheme for re-organisation of the whole department and the depots has been worked out by Shri Mukherjee. He has also laid down the rules for maintenance and the daily routine procedure in other engineering matters arising in the running of a big fleet. His recommendations deserve serious consideration of the Corporation.

4-6 As has been noted above, the Corporation has been purchasing new vehicles every year. One may therefore ask what should be the proper size of the fleet required for the different work. The number of lorries sanctioned for different services according to the present allocation of duties is as follows :--

(*a*)	*Conservancy*	
	Refuse collection	241
	Silt service	62
	Night soil	37
	Total for conservancy	340
(*b*)	*Other essential services*	
	(Carcass removal, water carrier)	17
[*c*]	*Other services*	
	(Stores, asphalt etc.)	36
	Total	393

To keep the above number of vehicles in daily service, some spare vehicles should be kept. Allowing 15% spare for (a) and 10% for (b) and (c) the total requirement would be 450. The above estimate can be further reduced if the lorries that work in the silt service at night are also used in the day time and the lorries (89) engaged in house-to-house collection of refuse which now work 2 trips, do an extra trip. It will be economical to have this done even on payment of an extra amount to the lorry staff as an incentive. Thus with good management, it should be possible to reduce the number of lorries to about 400.

4-7 There are 367 vehicles of 1953-61 purchase (330 in 1955-1961) all of which have much life left in them. If to this number, 40 vehicles purchased in 1962 are added, the requirements of the Corporation will be fully met. In addition to this, there are 61 vehicles of pre-1953 period, which can be repaired and used as stand-by. This position of 402+61 vehicles will be reached if 102 vehicles of 1953-1961 now out of commission for over 6 months and 82 vehicles lying idle for less than 6 months are repaired. This is a formidable undertaktng. A special unit should be created to tackle this heavy backlog which will take at least a year. When this is done and daily maintenance is not allowed to fall in arrears, the Corporation will have a fleet of 468 vehicles and should be in a comfortable position. The fleet strength can further be reduced if some vehicles do a second shift. The Corporation should therefore make enquiries before sanctioning any new purchase in future.

4-8 There is considerable room for reduction of the size of the fleet if the Corporation adopts the practice of using tractor-trailer combination or mechanical horses, as is done in Bombay. The strength of the Bombay municipal fleet is as follows :—

(*A*)	*Tractors, Mechanical Horses and other Motive Units.*	
(i)	Scammel Horses for towing 2.19 ton Scammel Trailers	27 Nos.
(ii)	Ferguson Tractors for towing 2.7 ton Ferguson Trailers	28 ,,
(iii)	Jeeps to tow 1½ ton Trailers	7 ,,
(iv)	Leyland moving floor-integral unit 4.5 ton	22 ,,
(v)	Low loaders—Studebaker-4 ton ...	12 ,,
(vi)	Low loaders-Bautom Carrier 1½ to 2 ton	11 ,,
		107 Nos
(*B*)	*Trailers.*	
(i)	Scammel Trailers (2.19 ton) ...	109 Nos
(ii)	Ferguson Trailers (2.7 ton) ...	29 ,,
(iii)	Trailers for Jeep (1.5 ton) ...	90 ,,
		228 Nos

It will be seen that the power units in Bombay are 107 compared with over 400 in Calcutta and a large number of trailers are used. If this is done, considerable economy may be made in the working expenses. It is necessary to add that Bombay also hires 60 to 70 lorries daily from Maharashtra State Road Transport Corporation.

Recommendations

4-9 (i) A high-powered officer of the rank of Deputy Commissioner should be placed in overall charge of Conservancy and Motor Vehicles Department and should be designated as Director of Gleansing.

(2) The Motor Vehicles Department should be placed in charge of a qualified Automobile Engineer: he will also take charge of the rolling stock of the Municipal Railway. The Depots should be placed in charge of Assistant Engineers, or if they are not available, qualified Senior Foremen.

(3) The Stores should be properly organised.

(4) Recommendations of Shri M. K. Mukherjee for re-organisation of the work in the depots and the Central Workshop and the Servicing and Maintenance schedules given by him should be seriously considered and implemented as far as possible.

(5) A special unit should be created to remove the backlog in repair of vehicles.

(6) Before sanctioning purchase of new vehicles, the Corporation should obtain a report, if necessary, from an independent source as to the condition of its fleet.

(7) Tractor-Trailer combinations should be used, as in Bombay, in larger numbers.

(8) The size of the fleet should be reduced by using tractor-trailers and by having more work done by the existing vehicles.

(9) A welfare section should be created to go into the grievances of the employees and bring them to the notice of the authorities.

CHAPTER 5

Administration and Distribution of Powers.

Section I - General.

5-1 Our survey of the working of the Water Supply, Conservancy and Drainage Departments of the Corporation has shown that these departments are not running efficiently and there are serious shortcomings to be overcome before the services can be restored to a state of normal efficiency. Even when this is done, there will still be difficulties for the people of Calcutta. There are factors beyond the control of the Corporation which have reacted on the present situation. Improvement of drainage will require sewering of the unsewered areas and improvement and augmentation of the present outfall channels and improvement of the regime of the Kulti River and linking of the drainage of neighbouring towns with that of Calcutta. Improvement of environmental sanitation will require removal of bustees and provision of adequate filtered water, not only in Calcutta, but also in the neighbouring towns, as they together from one inseparable area for spread of cholera and other intestinal diseases. The increase of population in Calcutta proper has thrown a heavy burden on its drainage, which was not expected when the present system was designed, and further improvement of the existing sewerage and conservancy system is necessary. The Consultant Team of the World Health Organisation, who studied the problems in 1959, considers that the works necessary "constitute a formidable programme." We have not touched the bigger issues, which require planning on a big scale and is now under consideration of Calcutta Metropolitan Planning Organisation. Our recommendations relate mainly to restoration of the existing services and installations to a proper state of efficiency, and where necessary, to undertake some new works of an immediate nature to improve the working of the existing services.

5-2 It may be stated at the outset that the Corporation has spent each year a very substantial portion of its income on the services, as will be seen from the statement below :-

(Rs. lakhs)

Year	1958-59	1959-60	1960-61	1961-62 (revised estimate)	1962-63 (budget estimate)
Income	729.53	688.73	759.14	834.88	898.84
Expenditure					
Conservancy	153.12	157.84	160.74	179.53	201.52
Drainage	62.87	62.01	60.37	64.87	70.46
Water Supply	141.86	140.60	146.62	163.17	178.25
Total. Expenditure	357.85	360.45	367.73	407.57	450.23
Percentage of total income	48.%	52.%	48.%	49.%	50.%

Expenditure in 1950-51 and 1951-52

	1950-51	1951-52
Conservancy	118.48	119.77
Drainage	39.24	42.41
Water Supply	100.78	108.43
	258.50	270.61

5-3 The above expenditure includes Rs. 4 to Rs. 6 lakhs per annum for the Tollygunge area since 1953-54. The total expenditure on the services was Rs. 258.50 lakhs in 1950-51 and Rs. 270·51 lakhs in 1951-52. Thus the expenditure of the Corporation for these essential services has vastly increased and the Corporation is spending half of its income on them. The question, however, remains whether the Corporation is getting full value for the money.

5-4 The first priority is to restore the efficiency of the administration, as otherwise the existing installations, which have not been adequately maintained in the past will grind to a halt in a few years. For example, there is, according to a survey made in March, 1962, an accumulation of 46.01 lakh cft. of silt in the sewers compared with 20.88 lakh cft. in 1951, which shows that the Corporation has been unable to dispose of its annual accumulation of silt, not to speak of clearing the backlog, and as the sewers are now 50% and, in some cases, 70% full, there is real danger of the sewers getting fully choked up in the near future, unless energetic steps are taken in the meantime to tackle the problem. The water-works at Palta are working with over-age pumps, liable to frequent breakdowns, but what is more alarming, is that due to default in removing silt, the settling tanks are nearly out of commission and silt is gradually invading the big reservoir and filter beds in excessive quantities, with the possibility of the whole system becoming inoperative in a few years' time. The state of conservancy services has given rise to persistent complaints from the public on account of the inability to remove garbage and filth and keep the city clean. The difficulty of the conservancy services has been largely aggravated by gross neglect of the conservancy fleet and the Municipal Railway. Therefore, the first problem of the Corporation is to tone up the administration, and to create circumstances under which the administration can function smoothly and efficiently. No serious attempt has been made so far by the Corporation to improve the administration.

Section II-The Scheme of Municipal Government

5-5 Administrative efficiency in a big organisation depends on delegation of sufficient authority at different levels, particularly to the executive, to be able to take prompt action in all matters of day-to-day adminintration and exercise proper control over the staff. The Calcutta Municipal Act, 1951 has created 3 authorities, namely, the Corporation, nine Standing Committees and the Commissioner, who have been charged with carrying out the provisions of the Act. The Municipal Government is vested in the Corporation except for those powers expressly assigned to the Standing Committees or the Commissioner by this Act or any other law. The statutory powers given to the Standing Committees and the Commissioner are meagre, but provision has been made for delegation of more power by the Corporation to the Standing Committees, and by the Standing Committees and the Corporation to the Commissioner. The Commissioner occupies a key position in the scheme of things. The entire executive power for the purpose of carrying out the provisions of the Act has been vested in the Commissioner by Act, but his statutory powers are very limited and unless these powers are supplemented by an adequate delegation of other powers by the Corporation and the Standing Committees, he cannot run the day-to-day administration of the municipal affairs with proper efficiency. It is felt that much more* delegation of power at different levels is absolutely necessary as, in our opinion, the present inefficiency of the administration is largely due to this drawback.

Section III- Delegation of financial powers

5-6 The Commissioner has power to sanction estimates up to Rs. 5000/- and can sanction execution of work or purchase of stores and materials involving an expenditure up to Rs. 10,000/- without calling for tender by advertisement. For estimates exceeding Rs. 5000/- but not exceeding Rs. 50,000/-, sanction of the Standing Finance Committee is necessary. For estimates exceeding Rs. 50,000/- but not exceeding Rs. 5 lakhs, the case has to be placed before the appropriate Standing Committee and after approval of the Standing Committee, before the Corporation for final sanction. Tenders have to be called by advertisement when the amount involved exceeds Rs. 10,000/-. Sanction of the tender has to be obtained from the same authorities as in the case of estimates according to the amount of the expenditure involved in the tender. The rules for contract are the same as in the case of tenders.

5-7 What should be noticed in this connection is that except where the amount involved is comparatively small, the procedure for obtaining sanction of an estimate has to be repeated to obtain sanction of the tender for the same estimate before the work can be taken up. Another point is that the specifications in an estimate or tender or a tender notice require the approval of Standing Committee concerned, which is rather an unusual way of dealing with technical matters by non-technical men. Moreover, no distinction is made whether the work to be executed or the supplies to be obtained relate to a new scheme or to maintenance and repair of the existing installations. It has been ascertained in the Corporation office that the time taken from submission of an estimate to the final stage for issue of work order is as follows, :-

(a)	For estimates up to Rs. 5000/-	3 to 4 months
(b)	For estimates exceeding Rs. 5000/- but not exceeding Rs. 10,000/-	5 to 7 months
(c)	For estimates above Rs. 10,000/- but not exceeding Rs. 50,000/-	7 to 8 months
(d)	Above Rs. 50,000/-	8 to 10 months

5-8 On going through some of the agenda of the Standing Works Committee, it is noticed that tenders for supply of materials were placed before the Committee a little before or after the date of expiry of the quotations and as reference of these cases to the Corporation would be necessary before any tender could be accepted, it is clear that the benefits which are expected from adopting a system of competitive tenders can hardly materialise in such circumstances.

Purchase of Stores.

5-9 The procedure for purchase of stores is also dilatory and is not suitable for maintenance of plants, vehicles and other equipments in the present conditions of scarcity in India. The general practice for purchase of stores required for maintenance is to prepare estimates of the quantities required for the whole year and place such estimates before the respective Committees for approval and then before the Corporation after the Committee concerned has approved an estimate. After obtaining the Committee's approval, tenders are invited and on receipt of tenders, the tenders are placed before the respective Committees and then with the recommendations of the respective Committees, before the Corporation for final acceptance of the tenders. After the Corporation's approval, contract is made with the successful tenderer for supply of particular stores for the whole financial year. Under the rules, such contracts should be finalised before the beginning of a financial year, but in practice they cannot be completed before 3 or 4 months of the contract year has elapsed. This causes various difficulties in obtaining supplies, particularly if there has been a change in the price. Moreover, if the actual requirements are in excess of the estimated quantities by 25% to 33$\frac{1}{3}$%, procedural difficulties will again crop up. As prices are now liable to fluctuation and there is scarcity of materials in the country, the system is hardly suitable in the existing circumstances. Moreover, there is a complaint that the bills of the contractors are not paid in time ; sometimes they are delayed by 4 to 6 months. It is therefore not likely that the Corporation will get good terms from the contractors or that first class parties will respond to their tenders.

Power of the heads of departments

5-10 As regards the subordinate officers, the Commissioner can delegate his power to sanction estimate or make contract but the limit is placed at Rs. 1000/- for such purpose. The Chief Engineer has been authorised to sanction estimates and purchase motor stores up to Rs. 1000/- and the District Engineers and Executive Engineers, Water Supply and Drainage, have similar powers up to Rs. 200/-. The Controller of Stores has power to purchase stores up to Rs. 1000/-, and Superintendent, Motor Vehicles, has power to purchase automobile stores up to Rs. 1000/-.

Financial powers of P.W.D. Engineers

5-11 In this connection, the financial powers of the Engineers in the P.W.D. of the West Bengal Government for sanctioning estimates (new and maintenance works), subject to budget provision being available, are shown below :—

Assistant Engineer (S.D.O.)

May accept tenders for all original and repair works up to Rs. 5000/- : no power of sanctioning estimates.

Executive Engineer

(i) May sanction estimates for original works up to Rs. 50,000/- and *all* estimates for repair works for non-residential buildings ;

(ii) May accept tenders for all works (original and repair works) up to Rs. 50,000/- plus 5% of the estimate ;

(iii) May purchase stores up Rs. 5000/- in each case ;

(iv) May sanction estimates for tools and plants up to Rs. 2500/-

Superintending Engineer

(i) May sanction estimates for original works above Rs. 50,000/- and up to Rs. 2 lakhs and all estimates for repair works pertaining to residential buildings ;

(ii) May accept tenders for all original and repair works up to the limit of the sanctioned estimates for the work plus 5% of the estimates ;

(iii) May sanction purchase of stores up to Rs. 10,000/- in each case and estimates for tools and plants up to Rs. 10,000/- (exclusive of any single items costing Rs. 2500/- or above).

Chief Engineer

(i) May sanction estimates for original works above Rs. 2 lakhs ;

(ii) Tenders do not normally come to him ;

(iii) May sanction purchase of stores up to Rs. 20,000/- in each case and santion estimates for tools and plants up to Rs. 25,000/- (exclusive of any single item costing Rs. 5000/- or over).

5-12 In the case of repair and maintenance works, provision in the State Budget is made after taking into consideration the requirements reported by the Chief Engineer and when the Budget is passed by the Legislature, the entire amount is placed at his disposal to be spent by the different authorities under him according to the delegation of power mentioned above without having to refer to Government unless any substantial departure from the approved rules becomes necessary. In the case of new (orignal) work, administrative approval of the work as well as the estimates is given first by Government and then provision is made for it in the next year's budget or in the revised budget of the current year in urgent cases, and once this is done, the Chief Engineer can take up the work without further reference to Government. In the budget of the Corporation, provision is made for funds for repair works generally in lump sums but sometimes also for specific works, but unlike the procedure followed in the P.W.D, the funds provided in the budget are not available to the Engineering Department and in each case both the estimate as well as the tender, if the amount involved exceeds the limit of the power of the Commissioner, have to be separately approved by the Standing Finance Committee or the Corporation before any work can be taken up. As has been explained above, this slows down the whole process. The powers of the Chief Engineer and the Executive Engineers of the Corporation are negligible when compared with the powers exercised by the engineers in the P.W.D., although in pay and possibly in experience they do not differ much. The financial powers given by the Act in 1951 to the Commissioner and the heads of the Departments are inadequate in the present conditions due to the rise of prices which has since taken place. More financial powers should be delegated to the Commissioner and Chief Engineer, at least in matters relating to maintenance and repair, if they are to function effectively and the present deadening effect of the procedure should be overcome. The risk, if any, is well covered by the provision of surcharge and disallowance under Section 159 which can be imposed by the auditors on any officer responsible for causing any loss to the Corporation by negligence or dishonesty.

RECOMMENDATIONS :

5-13 We consider that the present limits on the financial powers of the Commissioner in regard to sanction of estimates, acceptance of tenders and making purchase of stores and supplies are not reasonable and are largely responsible for inadequate maintenance of the works and installations. We therefore recommend as follows :-

I. Maintenance and repair works

(a) Within the budget provision, the Commissioner should be allowed to sanction estimates not exceeding Rs. 50,000/- for one work. Estimates exceeding Rs. 50,000/- should be placed before the Standing Committee concerned and the Standing Committee will be competent to approve estimates unless they exceed Rs. 1 lakh when the Corporation's sanction should be obtained. Engineering specifications in the estimates, when they have been accepted by the Chief Engineer, shall not be questioned by any non-technical authority. There should be standard form and agreement like 1911 (ii) and 2908.

(b) When an estimate has been sanctioned by the appropriate authority, the Commissioner shall be competent to call for tenders and accept a tender with the approval of a Tender and Purchase Committee consisting of the Chairman, Standing Finance Committee, Chairman of the Standing Committee concerned, the Finance Officer and Chief Accountant, the Chief Engineer, the Chief Law Officer and the Controller of Stores.

(c) *Purchase of stores*

Automobile stores, stores required for day-to-day work of the different departments and stores required in connection with the execution of any maintenance work of which the estimate has been sanctioned by the appropriate authority can be purchased by the Commissioner, subject to the required budget provision being available. No tender will be necessary for purchase of controlled goods at the controlled prices, automobile spare parts and other goods from the sole manufacturer or from its accredited agents, when there are no other manufacturers, and other goods when offered at rates approved by the D. G. S. & D. for supply to the Government Departments. In other cases a panel of suppliers should be prepared after inviting applications and purchase may be made after obtaining quotations from the dealers on the panel, according to the best offer made. In other cases tender may be invited according to the normal rules. Cenders should be accepted after approval by the Tender and Purchase Committee, as aforesaid. Purchase up to Rs. 10,000/- may be made by the Commissioner in case of emergency and up to Rs. 1000/- by the Controller of Stores or the Chief Engineer, but the case should be reported afterward to the Tender and Purchase Committee.

II. New Work

5-14 If a scheme has already been approved by the Corporation and provision for it made in the budget, the Commissioner may accept tender upto Rs. 50,000/- and in case of tenders of higher value by the Standing Committee concerned or by the Corporation depending on the amount involved, as has been explained above. The Commissioner may sanction a new work up to Rs. 10,000/- subject to necessary budget provision being available.

III. Purchase of Tools and Plants

5-15 Subject to budget provision, the Commissioner may sanction purchase of tools and plants up to Rs. 10,000/- (including any single item costing not more than Rs. 5000/-).

IV. Delegation of powers to the Chief Engineer and other officers

5-16 The Commissioner may delegate his power to sanction estimates for repair and maintenance works up to Rs. 5000/- to the Chief Engineer and up to Rs. 2500/- to the other Heads of Departments and to the Chief Engineer for purchase of stores up to Rs. 1000/-and to the other Heads of Departments up to Rs. 5000/-.

5-17 Delegation under Paras I, II and III will not require any amendment of the Act and may be made by the Corporation under Section 30, but delegation under Para IV will require amendment of Section 34.

V. Speedier payment of bills to contractors and supplier of stores

5-18 The work of auditing bills should be decentralised and an Accounts Officer should be posted in each of the big spending departments and after the bills are audited by these officers with reference to the estimates, sanction and a copy of the contractor's agreement, if any, they will be sent to the Head Office for issue of cheque. In case of bills of less than Rs 10,000/-, the above procedure may be further relaxed.

Section IV. Discipline and control of Staff

5-19 Unless the top executive is vested with sufficient power to exercise control and enforce discipline among the subordinate staff through whom the duties imposed on the Commissioner and Heads of the Departments will be executed, the administration cannot function with proper efficiency. This control is exercised directly and indirectly through the power of making appointments or giving promotion for good work and of imposing penalties for inefficiency and misbehaviour.

Commissioner's power to appoint the staff

5-20 At present the Commissioner has power to make appointment to posts which carry a maximum salary below Rs. 250/- per month. The power of filling posts having a maximum salary of Rs. 250/- or above is vested in the Corporation. The Commissioner has power to delegate his authority to Heads of Departments for making appointments to posts carrying a maximum salary below Rs.100/-. At present the heads of the departments have been given power of making appointment in respect of only workmen (mazdoors, skilled and unskilled labourers) whose maximum pay does not exceed Rs. 100/-, but not clerks, peons and others within this limit.

5-21 On going through the schedule of establishment, it becomes clear that the Commissioner has been made the appointing authority for posts in the categories of of lower division clerks, typists and other subordinates lower down in the establishment while practically the whole of the supervisory staff, subordinate and higher, and other higher officers, upper division clerks, head clerks and even stenographers have been excluded from the purview of the Commissioner's power. Thus in the Chief Engineer's office, the Chief Engineer has no power to appoint peons, orderlies and duftris, not to speak of the lower division clerks. In the Motor Vehicles Department, among 19 subordinate supervisory posts, the Commissioner can make appointment of 5 posts of junior supervisory staff on Rs. 100-240.

5-22 The power of making appointments to posts with a maximum salary of Rs. 250/- or above, which vests in the Corporation has been delegated to the Standing Finance Commitee up to posts carrying a maximum salary from Rs. 250/- to Rs. 750/-. Posts with maximum salary above Rs. 750/- and all statutory posts are filled by the Corporation. Statutory posts and posts carrying a maximum pay not below Rs. 1500/- are filled on the recommendation of the State Public Service Commission. Posts with a maximum pay below Rs. 1500/- but up to Rs. 250/- are filled on the recommendation of the Municipal Service Commission.

5-23 Under the Act, the power of imposing any punishment has been given to the authority by whom the employee is appointed. Therefore, practically speaking, except on the lower grade employees, the Commissioner has little power of enforcing discipline and control. If an employee with the maximum pay of Rs. 250/- or above commits an act of indiscipline or is found slack in his work, Commissioner or the head of the department cannot give him any punishment but a report has to be made to the Standing Finance Committee for taking disciplinary action and the latter decides whether disciplinary proceedings should be started and conducts the proceedings which are very slow. The Commissioner or the head of a department has not the power to record even a warning in the service book of such an employee. The heads of departments can punish majdoors only. It is difficult to maintain efficiency in such circumstances.

5-24 In our opinion, the present distribution of powers between the Corporation and the executive in the matter of appointment and control of the staff constitutes one of the principal defects of the system, which has contributed to the present state of administrative inefficiency. Although, all employees of the Corporation have been made subordinate to the Commissioner by the Act, in fact the Commissioner has no power to take disciplinary action directly against the staff, drawing Rs. 250/- and above, which forms the backbone of the various categories of services. Their allegiance seems to lie elsewhere. There is hardly any justification for treating the Commissioner and the heads of departments with such restraint. In Madras Corporaiton, appointments to posts with the maximum monthly salary up to Rs. 500/- are made by the Commissioner (Section 90 of the Madras Act)., Under the Bombay Municipal Corporation Act. the Commissioner makes appointments to posts whose *minimum* monthly salary, exclusive of allowances, is below Rs. 500/- (Section 80A). In the Delhi Municipal Act. the Commissioner has been given power to fill post carrying a minimum monthly salary (exclusive of allowances) below Rs. 350/- (Section 92). In Government departments, the head of the department and the heads of the offices under him have been given wide powers to appoint and punish practically all categories of non-gazetted staff under them.

5-25 The present power of the Commissioner should be brought in line with his opposite numbers in 3 big municipalities in India. The power of the Chief Engineer and other heads of department in the matter of making appointments should be correspondingly revised. The Commissioner and the heads of the department should have some power of control over employees who are appointed by the Corporation or the Standing Finance Committee.

RECOMMENDATIONS

5-26 The following recommendations are made for securing better control of the subordinate staff by the executive :-

1. *Appointment*

(a) The Commissioner may be given power to make appointment to posts carrying a maximum basic salary not exceeding Rs. 500/- per month (as in Madras), exclusive of allowances. This will practically bring under his control all subordinate staff blow the rank of what corresponds to gazetted officers in Government service ;

(b) The above power of the Commissioner may be delegated to the heads of department of the rank of Chief Engineer in respect of posts, clerical and otherwise, having maximum salary below Rs. 150/- per month and to other heads of department in respect of posts of workmen only from panels approved for the whole of the Corporation ;

(c) Recruitment will be made on the recommendation of the Municipal Service Commission for posts carrying maximum basic salary above Rs. 300/- per month.

2. *Punishment*

5-27 The Commissioner or the heads of department may impose any penalty as provided in the Act on any employee who is appointed by such authority. The Commissioner and the head of a department may impose any punishment other than dismissal, removal from service or reduction in rank on any employee working under him, if such employee has been appointed by a authority superior to him.

3. *Appeal*

5-28 The present arrangement for appeal may remain, but in the case of appeal against an order of dismissal, removal from service or reduction in rank made by the Commissioner in respect of an employee belonging to the supervisory staff whose post can be filled by the Commissioner, the Municipal Service Commission should be consulted before the Mayor disposes of the appeal.

SECTION V.—Recruitment of higher personnel

5-29 The efficiency of an organisation depends on the higher supervisory posts being manned by qualified personnel. It has been noticed that there is a large number of vacancies among the higher engineering and technical posts. In the Chief Engineer's office, the post of Chief Engineer (Rs. 1500-2000), Deputy Chief Engineer (Rs. 1200-1500), Civil Engineer (Rs. 1000) and Chief Estimator (Rs. 300-600) are vacant. In the Water Supply Department, posts of Deputy Executive Engineer, Water Works (Rs. 600-850), Superintendents of Pumping Stations (Rs. 600-800) are vacant. In the Drainage Department, post of Executive Engineer (Rs. 800-1200), Deputy Executive Engineer (Rs. 600-850), Resident Engineer (Rs.400-700), Outfall Engineer (Rs. 400-700) and Manager of Bantola Sedimentation Tank are vacant. In the Planning and Development Department which has been created on a temporary basis, the posts of Development Engineer (Rs. 1500-1800), Project Engineer (Rs. 800-1200) and Mechanical and Electrical Engineer (Rs. 600-850) are vacant. In these departments there are also numerous vacancies in the posts below the above categories, such as Assistant Engineer (Rs. 300-600) or such posts like Assistant Superintendent (Rs.200-350), Supervisors (Rs.250-450), Assistant Superintendent of Motor Vehicls Workshop (Rs. 300-600), Senior Workshop Foreman of the Motor Vehicles Department (Rs. 250-500). Most of the above posts have been filled as a stop-gap arrangement by appointing officers temporarily from the lower cadres. It has been reported that it is difficult to retain engineers in the Corporation's employment. In the Planning and Development Department, it is stated that for 11 temporary posts of Assistant Engineers (Civil), 10 candidates could be selected for appointment, of whom 4 did not join and 2 left after joining.

5-30 Although most of the above posts have been filled temporarily by appointing men from the lower ranks, such appointments have not been approved by the Municipal Service Commission and sometimes these appointment have been turned down by the Commission. In the Annual Reports of the Municipal Service Commission for the five years 1956-57 to 1960-61, many instances have been cited of cases of temporary appointments not approved by the Commission, continuance of such appointments against the provision of the Act, belated reference of officiating appointments to the Commission etc. In its Report for the years 1956-57 and 1957-58 the Commission states : "It was found that more often that not the Corporation laid down regulations prescribing such qualifications and other conditions of service as would suit particular candidates or render selection less competitive." The Commission, therefore moved the State Government for establishing a convention between the Corporation and the Commission in these matters similar to the convention which now exists between the State Government and the State Public Service Commission. Though later reports seemed to show some improvement, the irregular practices mentioned above were found still to persist, as the following remarks of the Commission in its Report for 1960-61 show :-

"The Corporation appears to be under the impression that it is sufficient if vacancies are reported within 6 months of their occurrence to the Commission for its recommendation in the normal way. Commission's approval is not generally sought to officiating appointments which often continue beyond 6 months against the provision of Section 81 (5) of the Calcutta Municipal Act, 1951."

5-31 There have been cases also in which the Commission's recommendation for relaxation of age or giving a higher starting salary in the case of an outside candidate has not been accepted by the Corporation, sometime to the advantage of the officer filling up the vacancy on a temporary basis, who was not selected by the Commission.

5-32 The object for which the Municipal Service Commission has been set up under the Act will be defeated if the practices mentioned above become rampant. The morale of the services will be affected if promotion can be secured not by hard and meritorious work, but by other means. It is desirable that Government should frame rules under Section 82 (2) establishing the correct convention between the Corporation and the Municipal Service Commission as to how the recommendations of the Commission should be treated, and provision should also be made in the rules for prompt reference to Government of important cases in which the Corporation cannot accept the Commission's recommendation for Government decision.

5-33 It is clear that the Corporation cannot allow so many of its engineering and technical posts to lie vacant or be filled with men with lower qualifications, without serious detriment to the administrative efficiency. The case of the Motor Vehicles Department may be cited to show the position. The workshop which is a most vital part of a big transport establishment is normally to have one Assistant Superintendent (on the grade of Assistant Engineer), one Senior Foreman (Rs. 250-500). The posts of Assistant Superintendent, Senior Workshop Foreman and one Workshop Foreman are now vacant for some time and the workshop has only one Foreman to keep it going. The four garages are each normally in charge of Garage Foreman (Rs. 150-350), but in two of them, the post is vacant and the garages are being run by an Assistant Garage Foreman on Rs. 100-240 each. Even a foreman on Rs. 150-350/- is not normally placed in charge of a big garage. One can understand why the Motor Vehicles Department is running so badly. There is a large number of vacancies among Assistant Engineers. On examining the scale of pay of the Corporation Engineers below the rank of Executive Engineer and of other technical personnel such as Foreman in Motor Vehicles Department, it is found that the pay scales are low when compared with the scales of pay given to such personnel under Government employment or by outside employers. There is an acute demand for young engineers, civil and mechanical, all over the country on account of industrialisation and development activities in the country. Therefore, the Corporation should be prepared to offer at least the pay which they can get in Government service. The other reasons why Corporation service is not attractive is that the chances of promotion in the Corporation sevice are rather meagre. This difficulty can be met by upgrading some of the posts below the rank of Executive Engineer (Rs. 600-25-800) These officers are treated as head of the department. They have heavy responsibilities and they occupy a key position. There is no reason why they should not be given the pay of Executive Engineers, namely, Rs. 800-40-1200. The present pay of Assistant Engineers (Rs. 300-20-500-25-600) is low when compared with the pay of such officers in the State Government service, namely, Rs. 250-25-850 (unrevised) plus D.A., or Rs. 325-30-475-35-1000/- (revised). If the pay of Assistant Engineers is revised according to this scale and pay of District Engineers and of officers in the similar categories is raised to the same scale as that of Executive Engineer, the new higher pay scales and improved prospects for advancement will attract young engineers. The pay of the Foreman in the Motor Vehicles Department may in a similar manner be revised to Rs. 300-15-400-20-550, with the Selection Grade going up to Rs. 650/-. These scales of pay are in force in the State Transport. If the pay is revised as recommended, it will be possible to get men with knowledge and experience of diesel vehicles and up-to-date garage practices. The Corporation should also revise its rules to give higher initial pay to a candidate for engineering or technical posts according to age and qualifications, if this is recommended by the Municipal Service Commission, and when advertising such vacancies it should always be mentioned that higher initial pay will be given to deserving candidates with superior qualifications.

RECOMMENDATIONS

5-34 (1) Rules should be framed by Government under Section 82 (2) for resolving differences between the Corporation and the Municipal Service Commission making it obligatory for the Corporation to refer important cases to Government for decision when the Corporation cannot accept the Commission's recommendation in the matter.

(2) The pay scales of the engineering staff below Executive Engineers should be revised to bring them on level with the scales applicable to similar posts under the State Government. The pay of District Engineers should be revised to that of an Executive Engineer, namely, Rs. 800-40-1200 plus D.A., and of Assistant Engineers to that of an Assistant Engineer, namely, Rs. 250-25-850 plus D.A., as in Government service. The pay scales of the higher posts of the subordinate supervisory staff in the Motor Vehicles Department such as senior Foreman, Workshop Foreman, Garage Foreman should also be revised to attract men with knowledge of handling and maintenance of diesel vehicles.

3) Special efforts should be made to fill up the existing vacancies among engineers and other technical personnel by taking up the matter with the Municipal Service Commission or the Public Service Commission, as the case may be.

SECTION VI—Corporation and Standing Committees.

5-35 It is necessary to examine how far the day-to-day administration of the affairs of the Corporation is affected by the working of the Corporation and the Standing Committees. It has not been possible to go in great length into this matter, but certain broad conclusions can be formed from a study of some meetings.

5-36 As has already been mentioned, the Corporation has been vested with all the powers except a few powers expressly assigned by the Act to the Standing Committees, or the Commissioner, for carrying on the Municipal Government of Calcutta. The Corporation has been given discretion to delegate its powers to the Standing Committees and the Commissioner to meet the practical needs of administration. Perusal of the proceedings and agenda papers of some meetings at random will show that delegation has been inadequate for carrying on the day-to-day administration efficiently.

5-37 The agenda for meeting held on 10th August, 1962 contained 66 items of of which 24 came from the Standing Committees for confirmation of their recommendations on various matters, 24 were motions received from members on many subjects, some of which did not relate to any matter coming within the purview of the Calcutta Municipal Act,such as felicitation for liberation of Portuguese territories in India, explosion of atom bomb, landing of U.S.A troops in Thailand, Police atrocities on medical students etc., and 12 items were for rescission of decision at previous meetings. Under the rules, notice for rescinding or amending a resolution of the Corporation is admitted if such notice is given by 10 members within 15 days of the passing of the impugned resolution, and on receiving such notice, action on the original resolution is stayed as a matter of course till the motion is disposed of. The practice is fraught with many undesirable consequences. Many of these rescission motions of this meeting dealt with promotion and other prospects of the employees and were not disposed of. Thus the order of the Corporation made on 7.10.61 for confirmation of a certain officer as Deputy Health Officer was held up by such notice. Another Corporation resolution of 6.10.61 for creation of a permanent post of a clerk in the Health Officer's office for some special work and filling it by one of the surplus epidemic clerks was similarly suspended. Another resolution of the Corporation of 29.9.61 revising the pay of P.A.s. to the Mayor and the Commissioner was the subject of a rescission notice and was hanging fire due to this notice. Another decision of the Corporation of 13.2.61 about the pay scales of Tindals and Tallymen was also stayed. Another such rescission notice was against the resolution of the Corporation passed on 1.6.62 appointing a candidate recommended by the Municipal Service Commission on 8.11.61 to the post of Manager, Entally Workshop, which has been lying vacant since 16.2.61, and the matter has thus been further postponed. Therefore, the effect of this procedure is to slow down the administrative machinery and to weaken discipline among the staff. One such notice has stayed the decision of the Corporation to allow a ladies' sports club to erect a temporary club tent in a park. Another is for cancelling the the decisions of the Corporation accepting certain tenders. Though there were 23 items from the Standing Committees, some of the items contained more than one subject. Some of these items had been pending from one meeting to another. Only 2 of these items were disposed of in this meeting. Out of the 66 items in the agenda, only 2 from the Satnding Committees and 5 others were taken up and finished.

5-38 The agenda for 6th July last contained 62 items of which 16 were from Standing Committees (11 disposed of) and there were a number of rescission notices and other motions, none of which were taken up. Some of the rescission notices were old ones and were carried forward to future meetings. One was for restoration of a special pay of a clerk of Rs. 25/- against the decision of the Corporation to reduce it to Rs. 15/-. The other motions were on subjects, some of which dealt with Corporation affairs and some with affairs of the world at large. None of the motions were reached and the effect was that they had to be carried to the subsequent meetings, the agenda for which therefore tended to become more and more unmanageable. One of the important items from the Standing Committees which was passed over was a recommendation of the Standing Finance Committee of 21.5.62 for not accepting the recommendations of the Public Service Commission to give a higher initial salary to a candidate for the post of Chief Engineer. It appears that the Commission did not succeed in obtaining a suitable candidate and therefore recommened a higher initial pay. It has not been possible for the Corporation to take any decision on this important matter.

5-39 It will appear that as many items cannot be taken up, the agenda for the subsequent meetings becomes progressively heavier. But even the recommendations of Standing Committees which deal with administrative matters cannot be fully disposed of. The following statement based on the agenda papers for 6 recent meetings shows the position at a glance :-

	8.6.62	15.6.62	22.6.62	29.6.62	6.7.62	10.8.62
(1) Total number of items	29	41	46	33	62	66
(2) No. of items from the Standing Committees	20	26	8	19	16	24
(3) No. of items from Standing Committees disposed of.	12	15	8	9	11	2
(4) No. of other items disposed of.	nil	4	8	nil	nil	5
(5) Total No. of items disposed of.	12	19	16	9	11	7

5-40 As the Commissioner has very limited powers, most of the administrative matters have to be processed through the Standing Committees and as the Standing Committees themselves except the Standing Taxation and Finance Committee have also limited powers, there is a heavy outflow to the Corporation. The Standing Finance Committee is the most heavily worked of the Standing Committees, as it deals with appointments, service matters and financial matters, such as estimates and tenders etc. The number of items before the Standing Finance Committee and the disposal of the items as in the 3rd week of August are given in the following table ; these have been taken at random from the agenda papers of that Committee---

	No. of items	When disposed of
18th January, 1962	118	31 on 18.1.62 33 on 2.2.62 3 on 20.2.62 46 on 22.2.62 20 still pending.
22nd February, 1962	134	5 on 22.2.62 4 on 1.3.62 58 on 6.3.62 14 on 13.3.62 7 on 15.3.62 46 on 26.3.62 30 still pending
27th February, 1962	4	2 on 27.2.62 1 on 13.6.62 1 pending
28th March, 1962	136	27 on 28.3.62 71 on 29.3.62 18 on 31.3.62 10 pending

5-41 A resolution of a Standing Committee can also be stayed under rescission notice and this device is used to hold up a matter after it has been decided by a Standing Committee.

5-42 The agenda papers, the notes etc. for the meetings of the Standing Committees are printed before circulation and when the recommendations of the Standing Committees are sent to the Corporation, the proceedings of the Standing Committees are also printed before circulation to the Councillors. The procedure, therefore, involves much time and heavy expenditure.

5-43 Some idea has been given of the manner in which the Corporation and the Committees function. The whole machinery of the administration gets clogged up. The Corporation should, therefore, consider the question of revising the present delegation of powers to the Standing Committees and the

Commissioner. It is submitied that the legislative and the policy making functions should be separated as much as possible, if not completely, from the policy executions functions. Under the present arrangement too many administrative matters go up to the Corporation and the services of the Standing Committees are not utilised to the full extent of their possibilities. Therefore, further delegation of powers should be made to the Standing Committees enabling them to work within the sanctioned budget without reference to the Corporation and only important policy matters, new and big schemes for improvement, and big contracts and important matters of public interest should be referred to the Corporation. Matters like giving lease of land (not making a free gift) should be decided by the Standing Committees. proceedings of the meetings of the Standing Committees may be placed before the Corporation for information of the Councillors. The powers of the Commissioner should be increased according to the recommendations which we have already made. There is some doubt whether the Standing Committees can delegate to the Commissioner any powers which have been delegated to them by the Corporation as re-delegation of delegated powers is considered to be legally void. Therefore, delegation should come from the Corporation direct to the Commissioner and to other heads of department. For this purpose, Sections 30 and 34 require amendment.

5-44 The Rules of Business also require amendment to prevent too many rescission motions and motions on matters not within the purview of the Calcutta Municipal Act. The Corporation is now empowered to make the Rules of Business under Section 97 without any reference to the State Government. At least to discourage indiscriminate use of rescission motions, it may be provided in the rules that if any rescission motion is not disposed of by the Corporation within a month, it will lapse automatically ; similar provision may be made that a rescission motion in the Standing Committee will become infructuous if it is not disposed of within a fortnight.

5-45 Although not strictly within our terms of reference, it is permissible to make some observations on the present three-tier constitution of the Corporation as it affects administrative efficiency. There are, in our opinion, too many Standing Committees to permit of prompt despatch of work. In Bombay Corporation, there are 3 Statutory Committees, namely, a Standing Committee, an Improvement Committee and an Education Committee, besides the Commissioner. In Delhi Corporation the Statutory Committees are the Standing Committee, Water Supply and Sewage Disposal Committee, Education Committee and Rural Areas Committee in addition to the Commissioner. The Delhi Corporation also looks after the rural areas of the Union Territory of Delhi. Bombay and Delhi Corporations have one or two other committees to run their commercial undertakings, Electricity Supply and Transport, but they are not normal part of the municipal administration. In Madras Corporation there are 6 Statutory Committees. It is felt that there will be much improvement in the disposal of work if the number of Standing Committees is reduced and adequate delegation of power is made to the Standing Committees and the Executive in a more liberal manner.

5-46 The idea need to be carried a little further as the problems of water supply, drainage and sewerage in Calcutta are interrelated. At present there are two Standing Committees, namely, Works and Water Supply, to deal with these matters. The three services, Water Supply, Drainage and Conservancy are of the highest priority in the life of a city, but their Standing Committees have to compete with a number of other Standing Committees for funds and time and attention of the Corporation. In view of the deterioration which these services have progressively suffered, it is recommended that they be brought under one committee, which will have a semi-autonomous status under the Corporation. In Delhi there is a Statutory Committee for Water Supply and Sewage disposal, known as Water Supply and Sewage Disposal Committee, which runs the Delhi Water Supply and Sewage Disposal undertaking. It submits its own budget to the Corporation and maintains separate accounts. For Calcutta a Water, Drainage and Sewage Board may be set up under the Corporation which will have power to function independently, within the framework of the budget approved by the Corporation and appoint its own staff. It will have to go up to the Corporation for approval of the revised budget and provision of funds for normal day-to-day work and for new schemes involving fresh expenditure above a certain limit. The Corporation may have power to call for report and also give directions after proper enquiry when anything goes seriously wrong. The Board may consist of the representatives of the Corporation as well as some outside members nominated by the State Government who are considered specialists in the subject.

5-47 If the Standing Committees are given wider powers, the responsibilities for control of expenditure at the lower level will increase, as the cases will not normally go to the Standing Finance Committee. It is therefore recommended that the Finance Officer and Chief Accountant should be appointed by Government and removable by Government. He will record his views on any proposal for expenditure received from the Standing Committees and will have the right to bring such cases to the notice of the Standing Finance Committee for order. Difference between two Standing Committees should be resolved by reference to the Corporation.

5-48 Our conclusion is that the present unsatisfactory condition of the Corporation is due to delay in disposal of business by Corporation and Standing Committees, and various defects in the existing system, resulting in administrative inefficiency, which can be cured by delegation of sufficient authority to the executive and by re-distribution and re-organisation of the functions of the Corporation and by improving its procedure of work.The delegation of power we have recommended is not excessive when compared with the powers exercised by the heads of departments in Government offices. As efficiency of municipal administration, and with it, the welfare of the people of Calcutta are at stake, recommendations made by us for improvement of the administration should be implemented, if necessary, by amendment of the relevant sections of the Act to ensure that the essential powers necessary for the executive to function effectively are delegated by the statute. Government may also retain some power to frame rules, if necessary in these matters, to resolve differences between the Municipal Service Commission/ State Public Service Commission and the Corporation in important matters (Section 82), to make the rules of business more business-like (Section 97) etc.

5-49 Sanction of the State Government is now necessary under the proviso to Section 112 if the Corporation wants, without inviting any tenders, to do any work or purchase any materials involving expenditure exceeding Rs. 10,000/-. This provision causes practical difficulties and should be modified and Government sanction should be asked for when the amount involved exceeds Rs. 1 lakh.

RECOMMENDATIONS

(1) The legislative and policy making functions of the Corporation should be separated as much as possible from the administrative functions and wider powers should be delegated to the Standing Committees and the Executive to dispose of normal administrative matters without reference to the Corporation. The decisions of the Standing Committees which will be final should be placed before the Corporation for information.

(2) The rules of business should be amended to prevent decisions of the Corporation and the Standing Committee being held up indefinitely by notice of rescission motions.

(3) Amendment of the Act is necessary to reduce the number of Standing Committees.

(4) A semi-autonomous Board should be created under the Corporation to deal with water supply, drainage and conservancy, and subject to control over its budget and power of giving directions in matters of policy, sanction of new schemes and schemes of improvement and provision of necessary funds by the Corporation, the Board should function independently,

(5) The Finance Officer and Chief Accountant should be appointed by Government to advise the Standing Committees on financial matters, with right to refer such cases to the Standing Finance Committee.

(6) Sections 30, 34, 82, 97 and 112 should be suitably amended.

सत्यमेव जयते

Government of West Bengal

Local Self-Government & Panchayats Department

Report of the Corporation of Calcutta Enquiry Committee

Volume II

Note on the Working of the Motor Vehicles Department

by

Shri M. K. Mukerji, B.E. (Mech.)

Superintendent, Calcutta State Transport Corporation
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REPORT OF THE
CORPORATION OF CALCUTTA
ENQUIRY COMMITTEE

Volume II

NOTE ON THE WORKING
OF THE MOTOR VEHICLES DEPARTMENT

BY

SHRI M. K. MUKERJI, B.E. [Mech.]

PREFACE

THE Chairman of the Calcutta State Transport Corporation who is also the Chairman of the Committee of Enquiry on certain aspects relating to the working of the Corporation of Calcutta, set up by the Government of West Bengal, desired that the working of its Motor Vehicles Department should be examined by me with a view to prepare a note for the use of his Committee covering the organisational and other Engineering matters arising in the running of a big fleet as well as matters essential for efficient management of a large fleet of Motor Vehicles, particularly engaged in such type of essential work.

Owing to the characteristics of this Transport Service—mainly used for the conservancy work of the Corporation of Calcutta—the management of such an organisation has to depend to a large extent on the co-operation of so many Departments of the Corporation of Calcutta, using their services, in the matter of making the best possible use of available "Pay Load." But the Management of the Transport Unit will have to ensure that vehicles in the fleet are kept in good running order so that the Departments which use their services, can depend on it for efficient execution of the work in the respective Department.

Accordingly, a note with my observation on the survey of the working of the Motor Vehicles Department of the Corporation of Calcutta, has been prepared. My recommendation on the proper organisational structure and on various Engineering matters, arising in the efficient management of a big fleet of Motor Vehicles, is submitted herewith.

M. K. MUKERJI

REPORT OF THE CORPORATION OF CALCUTTA ENQUIRY COMMITTEE

NOTE ON THE WORKING OF THE MOTOR VEHICLES DEPARTMENT

VOLUME II

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Note on the Working of the Motor Vehicles Department

Introductory

The Motor Vehicles Department is one of the important units of the Engineering Organisation of the Corpoaration of Calcutta, under the control of the Chief Engineer and is responsible for the maintenance and operation of a large fleet of vehicles and epuipments---Trucks or Tractors for conservancy services, office cars for departmental use and vans for Ambulance service. The Superintendent of Motor Vehicles Department is the Direct officer for superior supervision.

In a Municipal Corporation of a city like Calcutta, there are so many services which are performed by the various units of the Engineering organisation, of which conservancy services--Refuse clearance, Night soil, sewerage and drainage silt--are the most important. The District Engineers under the Corporation of Calcutta are responsible for the services within the areas under their control. In the conservancy service, the Refuse clearance however, consists of three parts (i) Street sweeping and collection of refuse from houses and street corners, (ii) Removal and transportation, and (iii) Disposal. For removal and transportation of the refuse, District Engineers have to depend on the Motor Vehicles Department, but the efficiency of transport service depends much on the effective utilisation of the vehicles.

The method of disposal is also very important. This part of the job is done by the Municipal Railways. The refuse is carried on Railway wagons to a distant place outside the city from the Refuse Platform. Dumping Grounds are also operated under the control of this Department. Here also, efficiency of transportation service depends much on the efficiency of this Department i.e. Municipal Railways.

In order to ascertain the real problems affecting efficient functioning of the Motor Vehicles Department, not only the different units--Maintenance Garages, Workshop and Offices etc. under this Department were visited at different hours on several days, but also the work under different units of the Engineering Organisation, such as the office of the Municipal Railways, Refuse Platform, Dumping grounds, work of collection of refuse under the District Engineers, etc. were also examined on the spot to collect first-hand information.

In this connection, I met the Chief Engineer, Heads of other Departments, Superintendent of Motor Vehicles Department and Officers-in-Charge of various units. Informations were collected mainly during my visits. These infomations were then confirmed by official correspondence as far as possible. Detaits of the working however, were collected through correspondence. The problems that have been dealt in this report have been discussed in presence of the officers of the units, when it was necessary.

Before proceeding further in dealing with the various problems arising in the running of a big fleet, I would like to record my gratittde to the Chief Engineer, Heads of the Departments of other units and various other officers of the Corporation of Calcutta for their co-operation and assistance in this work.

General observation

To run a transport fleet efficiently there are certain essential requirements, most important of which is the "Organisation" itself. The Transport Department of such a big Municipal Corporation however, will have to depend on the overall control of the "Top Management" in various matters, but for efficient functioning of the work of Cleansing, co-ordination between the departmental heads is essential. While it may be somewhat difficult to generalise the problem in such a transport service, it may however be safely said that the problems in a Motor Transport Department are more an organisational than anything else.

The organisation structure for efficient management of Motor Transport Department, such as this, need not follow the typical pattern, but it should have a very strong Engineering Organisation under a management possessing Technical ingenuity and competence as well as a strong general administrative machinery to tighten the control and to enforce discipline in the department. While the Engineering organisation, on the one hand, shall maintain the costly vehicles and equipments and control the function of the various units under it to run the services efficiently, it should, on the other hand, be able to foresee the future problems in such type of organisation as well as to carry out development plans to meet the evergrowing demand in a big Municipal corporation of a vastly expanding city. The management should have the ability to control the cost of maintenance with the help of performance records and statistical data as well as by analysing different aspects of the problem in the operation and maintenance. The management should also have the ability to apply at least the elementary principle of production control to ensure control on the "Turn-over" of the services and in organising the productions in the workshop under this Department.

Organised Engineering Stores is essential to maintain machineries and equipments. This is equally applicable to a big transport fleet. As a matter for that, the Engineering Stores should preferably be attached to the department concerned for Inventory Control of stores, for control of the stock to avoid dislocation of the services at far as practicable at the same time maintaining minimum obsolescence of stores.

Before any attempt is made to suggest suitable Organisation, structure for efficient management of a big fleet of Transport vehicles and suggesting procedure on various "Engineering" matters arising in the running of a big fleet, survery of the working of the Motor Vehicles Department and various other departments, such as Municipal Railway Office of the District Engineers etc., was made. The observations are given in the following note:

The Motor Vehicles Deprartment grew up to a size as big as this commanding a strong fleet of 563 (Appendix IA and II), motive units for the different municipal services sanctioned from time to time. The department, does not appear to have been developed in the proper line and the present management is not competent to run efficiently such an essential department as big as this. The facilities are outmoded and completely inadequate to meet the present situation. There are serious shortcomings to be overcome before the department can be restored to a state of normal efficiency.

Existing Set up :

Accommodation in Workshop & Garages

The Department, as has already been said, is essentially an Engineering Department. The Engineering Organisation under the Chief Engineer with the Superintendent of Motor Vehicles as the Direct Officer for this unit is shown in the Appendix I.

There are 4 Garages, each operating more than 100 vehicles and there is one big Workshop. The work of daily maintenance and repairs are supposed to be carried out in the Garages and the Workshop is supposed to carry out overhaul of Engine, Chassis and major repairs in case of accidents.

The Motor Vehicle Workshop at the premises 164, Lower Circular Road, which is the Central Workshop of the Motor Vehicles Department and was set up long time back, might have been adequate for the then condition. It is considered hopelessly inadequate to meet the present requirement of overhauled chassis and other major units necessary for maintenance and operation of a transport fleet as big as this. The machine tools and equipments are too old to turn over accurate job. Absence of modern automotive machine tools for automobile workshop (except Crankshaft Grinder) and other servicing equipments, is conspicuous. Not enough space is available for all operations. The space available inside the Workshop may be just enough to install additional machine tools and equipments required for different section in overhauling of vehicles but there is no space for re-assembling of the chassis during overhaul or major repair to units or chassis as a whole, for which the vehicle must come to the Central Workshop.

To cope with the increase in the number of vehicles in the fleet, adequate facilities for garaging and arrangements for maintenance in the modern line should have been provided in different Garages. Equipments for servicing and maintenance should have been placed at the disposal of the Maintenance Department. The layout of the garages which is not suitable for the purpose of efficient operation and maintenance of large fleet, should have been remodelled in the meantime.

Maintenance of Vehicles

Looking at the maintenance side of the vehicles in the fleet, it may be said that the life of the vehicles or major units had definitely been cut short due to lack of maintenance. Efficient maintenance and management of such fleet where a vehicle does not cover more than 15,000 miles (40 miles a day on an average) a year should not have created any difficult situation in the department, had there been proper organisation. Many of the vehicles which were purchased in the year 1955 and onwards have also been lying out of commission for want of repairs.

No system of maintenance appears to have been followed to keep the vehicles in good running order. The number of technicians may appear to be inadequate on the basis of the total strength of the fleet, but the number is not so poor if only the vehicles in commission are considered. To meet the situation caused due to the introduction of E.S.I. Act, few additional staff may be necessary. But the present strength cannot make up in any way, the backlog in the work, created for obvious reasons during the last few years.

Selection of Vehicles

There appears to have no principle in the matter of selection or purchase of vehicles. Advantages have not been taken of the development of Heavy Duty Commercial Diesel Vehicles for Conservancy service. There is still a tendency to go in for Petrol Engine Truck. The use of tractor or mechanical horse and trailer combination unit for municipal services, is not favoured by the department.

The present fleet of 501 vehicles of the Motor Vehicles Department for municipal services (excluding Ambulance & Departmental cars) including 30 Tractors, consist of as many as 12 models in case the truck and 3 or 4 in case of tractor. Out of 501 trucks and tractors (according to the statement given by the office of the Superindent of Motor Vehicles) 261 had been lying out of the commission on 1st May, 1962, of which again 174 vehicles have been off the road for more than 6 months. The statement showing the disposition of vehicles in different garages and the statement indicating the position of the vehicles held up on the basis of the age of the vehicles are given in Appendix 1 (A) and 1 (B).

Utillisation of the present resoorces

From the Appendix, it will be found that out of the 174 vehicles lying out of commission since the last 6 months, as many as 72 vehicles belong to the type and model which were purchased befor 1951, and the rest belong to the type and model, puchased thereafter ; most of the vehicles of later model, which were held up on this date, did not cover generally more then 50,000 miles (in one case it covered 79,000 miles and in another 52,000 miles). Amongst those belonging to later model, there were 26 Dodge, 19 Bedford Diesel. 14 Mercedes Benz, 3 Fordson Thames Diesel Engine and 11 Scammell Refuse Carrier.

When the position of conservancy service deteriorated so much, the vehicles belonging to this model could have been made ready by extra effort of all concerned. The present situation could have been avoided by utilising the available fleet of vehicles, which are usually under-worked, for additional trips in another shift, by adjustment of programme.

According to the report of Chief Engineer (Offg.) 2200 Tons (approx.) of refuse are to be removed daily. Working in another shift may be avoided if the unproductive hours per lorry, which are increased due to unnecessary delay of these vehicles on the way to or at the dumping ground and Refuse platform, caused by lorry majdoor for their daily unauthorised operation of picking rags, broken utensile etc. is cut down. The time saved per trip could make it possible to attend ane more trips per truck according to the previous Route Chart of 3 trips per Truck (5-Ton capacity), in all the areas under different Districts of the Corporation.

The condition of the Office Cars for departmental use and the vehicles used for Ambulance services, has not been examined in details. It is, however, gathered that many of the Ambulance vehicles are very old and the present numbers are not sufficient to meet the demand. Addition of few more vehicles in the fleet and replacement of few old vehicles will help to overcome considerably the difficult situation in this respect.

The Motor Vehicles Department of the Corporation of Calcutta as it appears from their records, had been reorganised on more than one occasion in the past. These reorganisation schemes do not appear to have taken into cosideration most of the important aspects in the efficient management of a Road Transport Department. There had been practically no reference to maintenance scheme and the methods of control on the work at various stages. Remodelling of the Central Workshop and Garages, for efficient working in the line of modern trend, should have been considered in the re-organisation schemes. In other words, the present situation could have been avoided to some measure if the Department had been reorganised properly.

In order to be able to deal with problem on maintenance & repair and also to enforce control over the work o fmaintenance, there should have been experienced or qualified Engineers as In-chrge of each of the Garages. Under the present set-up, one Garage Foreman is In-charge of the Garage and has overall responsibility for the maintenance & operation. One Assistant Garage Foreman works under the Garage Foreman in each Garage and is responsible for repair & maintenance.

From enquiry, it is learnt that the Garage Foreman of this Department are not qualified or experienced Engineer as a result, they could not possibly exercise control over the daily work of maintenance & repairs.

During enquiry, I could meet only one Garage Foreman---other two being on long leave. Some of the Assistant Garage Foreman are officiating in place of Garage Foreman. The Garge Foreman, I met, is not an experienced Engineer. He, however, has got long experience of operation of various municipal services and appears to be quite useful to deal with the day-to-day problem of operation in this Department.

Some of Assistant Garage Foreman officiating as Garage Foreman have some experience of automobile repairs but they need comprehensive training on modern system of maintenance as well as on the repairs of Heavy Duty Commercial Diesel vehicles. Their service may thus be usefully utilised if they are guided properly by a qualified and experienced Engineer. They also have, long experience of operation of municipal services and they appear to be very useful otherewise to handle the day-to-day problem in the operation of various municipal services.

The Workshop which is responsible for overhaul of Engine and Chassis of so many vehicles has not got requisite number of qualified and experienced Engineer. Many of the posts are lying vacant.

The post of Assistant Superintendent, Workshop, Sr. Works Foreman and another post of Works Foreman have been lying vacant since long. The work is managed by only one Works Foreman doing the function of Sr. Works Foreman, another Works Foremean, in addition to his own. The work is too heavy for one man - the present Works Foreman now looking after the work though he is not a qualified professinoal Engineer, has good experience of automobile repairs & overhaul and is quite competent to look after the overhaul and repair of automobiles, but if one qualified experienced Engineer is placed as overall charge of the Workshop, the progress and management of the Workshop would be much better.

Now that there are many vacancies in the post of supervisory staff, it has created very difficult situation in the execution of the work of repair & overhaul. So many posts should not have been kept vacant, so long. If these posts could not be filled up for want of suitable candidates, the matter needs immediate attention of the authority to find out if the pay in these responsible posts, are attractive enough for qualified and experienced Engineer.

The Superintendent of Motor Vehicles Department presented copies of records in which his office has pointed out the difficulties in the working of Motor Vehicle Department since 1955. The note covered the problem in respect of accommodation for parking of vehicles, accommodation in Central Workshop for overhaul, major repair work, lack of adequate machine tools, want of adequate hands for repairs & maintenance and inadequate staff for supervision of the Engineering work.

It is also found that a Special Committee was appointed quite sometime ago by the Corpotation of Calcutta to enquire into the working of Motor Vehicles Department and to suggest method for improvement. It is not understood why the recommendations of the Committee was not implemented so long. ***It is difficult to appreciate the reason why such a matter of great importance did not receive due attention of all concerned.***

From a discussion with Chief Engineer, it is understood that very recently he (C.E.) has taken up the case for recruitment of staff and to organise the proposed Maintenance Garage at the old refuse platform at Chingreehatta, where all the vehicles of Central Garage will be removed. Necessary expansion of the Motor Vehicles Workshop may then be carried to take up additional work due to expansion of the fleet.

In the present situation, Superintendent Motor Vehicles, the Works Foreman or the Garage Foreman, cannot do anything better as practically everything is out of gear. The amount of backlog in the work of repairs and overhaul, is considerable. Extra effort of another independent unit is necessary for sometime to restore the normal working.

The facilities for Servicing which were not adequate in any of the Garages at any time, are practically absent now. Some of the equipments which were purchased quite sometime back, were found defunct. From an enquiry it is also learnt that proper tools to undertake repair on modern automobiles, are inadequate.

Although the Department has so many diesel vehicles in the fleet, proper arrangement for Servicing Fuel Injection Equipments has not been made so far. As a matter of fact, the Department should have their own Fuel Pump Calibrating Machine & Injector Servicing Equipments consisting of Needle & Nozzle, Reconditioning Machine & Test Pump for Servicing Injetors.

Complaint by Department about the Perkins Diesel Engines

That lack of proper knowledge in the operation & maintenance of Diesel Engine and lack of control on the work at various stages caused a situation as this, will be found if the failure of the Piston on some of the Perkins Diesel Engine, is examined critically. I have examined 5 or 6 Perkins Engines, which were held up due to excessive consumption of Engine Oil. On opening 3 Engines, the "Piston Land" on one or two of the Pistons in each Engine, were found to be broken with the result that the effect of sealing by the rings was completely lost and therefore the Engine oil was thrown to the Combustion Chamber. This is the main cause of excessive consumption of the "Engine Oil" in some of the Engines.

From the measurements of the Piston rings and the groove in the Piston, (at a place adjacent to the portion at which it failed) I was convinced that the condition of these Engines---Bedford Perkins Diesel Engines immediately before this phenomenon of abnormal consumption of Engine Oil started, was mechanically sound. There was no sign of excessive wear on the ring and there was no abnormal clearance between the Ring and Ring Groove, which is generally the cause of excessive oil consumption due to pumping action. The wear on the Cylinder liners were rather excessive for this mileage of the Engine. The Piston otherwise has stood well---the wear was not very unreasonable.

There cannot be any doubt that the land on the Piston was broken as a result of detonation in the Cylinder due to the use of some other fuel by improvised means instead of the Fuel "High Speed Diesel Oil". Mechanical staff who have very little knowledge of High Speed Diesel Engine and having no knowledge of the effect of the use of fuel like "Petrol" have a strong inclination to use it for starting an Engine easily when all other means in the usual course, failed to start owing to the defect in the Fuel or Main timing in the Engine. The other conditions particularly the condition of the "Fuel Oil filters" and Engine Oil Filters indicated lack of proper knowledge of the maintenance of Diesel Engines amongst the staff in the organisation. It has led to such a difficult situation by causing early failure of the Engines.

Security Measures

In the layout of the Garages, there is no provision to enforce Security measures. Security measure is essential in such type of organisation where costly equipments like Motor Vehicles consisting of many accessories, are kept in large numbers.

The residential block is situated within the same compound wall. There is no demarcation by a suitable boundary wall between the residential block and the work site i.e., the Garage. In the process of conversion to Motor Transport Garage, adequate arrangment to enforce security measures should have been made.

Stores Organisaton

The main store of the Motor Vehicles Department situated within the Workshop Building (at Central Garage) is under the Controller of Stores. There are sub-store at each of the 4 Garages, which deal only with receipt and issue of fuel, lubricating oil, grease, sundry stores. None of the spares, which belong to very fast moving group, is kept in these Stores to meet emergent situation. There is a "Petty stores", as it is called, in each of the Garages under the Superintendent of Motor Vehicles, which maintain a very limited stock of small items of automobile accessories like nuts and bolts, high tension wire, etc.

The Central Store of the Motor Vehicles Department has not got sufficient space for proper storing of the materials. Adequate number of store bins were not provided. Consequently, spares whatever in stock, could not be arranged properly so as to minimise unproductive labour in the issue of materials against demand. The location of "Stores" in an Engineering organisation is very important factor as loss of man-hours due to material handling otherwise, is excessive. The location should be such as to maintain a uniform flow of materials from Stores to Workshop without any criss-cross movement.

The method followed in the Department for inventory and procurement of spares, does not appear to be very suitable for Road Transport Engineering Department of an essential service.

While examining the provisions in the Budget under different head of Accounts for purchase of store material as well as the actual expenditure on these items, it appeared that amount spent during the last two years on "Spare Parts" (Budget Head-92D (i) (a) —spare parts Appendix_ III) was proportionately high in comparison to the fair consumption on the basis of cost per mile for this fleet of vehicle having the cumulative mileage of individual vehicle upto this stage, so low. If the cost of spare parts cannibalised from some of the vehicles, are also included, the figure "Cost per mile", will increase further. But from the general trend of the discussion and enquiry, it came to light that there is dearth of spares. As the cost of maintenance on account of spare parts appears to be high, may it either be that there is wasteful expenditure or it may be that due to lack of adequate maintenance, and that the replacement of parts are too frequent, the matter needs further examination by the appropriate authority.

The amount spent on lubricant also should have been less if compared to fair consumption at such a mileage of the vehicles. The most important point that attracted my notice is the insignificant amount spent unde the Budget Head-92 D I (b) (iii) for Tyres & Tubes etc. The natural conclusion is that this could not have been sufficient to meet the requirement of the Department. The requirment of the Department might have been met by utilising so many tyres removed from the vehicles, otherwise held up. This was also proved from the report of the different Garage Foreman as well as Superintendent, Motor Vehicles, that many of the vehicles have to run on single rear wheel instead of dual. The ultimate effect of this will be reflected in the increased cost of maintenance of tyres in the long run, as the tyres of the vehicle (4 tyres instead of 6) are subject to overloading. Actual expenditure on tyres and tubes, will be much more if the cost of all the tyres removed from so many vehicles are added to the regular purchase of new tyres and tubes.

On conversation with the Controller of Stores, it is also understood (Controller of Stores has produced a recent correspondence in which he suggested some improvement in the Stores organisation attached to Motor Vehicles Department; unfortunately, the matter, as he reported, has not been finalised with the result that he could not very well improve the situation) that the question of improvement of Motor Vehicles Stores organisation is still under examination. The position could be improved if the recommendations of the Controller of Stores with regard to procurement and storing of spares are implemented with slight modification to the present limit of the 'Power of purchase' deligated to different Officers. The method of purchase of stores is also not suitable for this essential transport service.

The Motor Vehicles Stores, however, is being shifted to new premises by the side of the Central Garage. The space may not be inadequate if the bins are designed properly and full height of the space is utilised, but the location of the 'Stores' will not in any way be very convenient from the point of view of organised material handling.

Office & Admninistration: Superintendent Motor Vehicles Department

There are other difficulties which affect efficient management of the department.

(i) The Superintendent of Motor Vehicles Department who is the head of the office does not appear to have sufficient power to deal with defaulters for various activities in the Department, such as the driver, the mazdoor (lorry mazdoor) or the staff for repair and maintenance;

(ii) Superintendent of Motor Vehicles Department can purchase spare parts against quotation to meet urgent situation within the limit of the financial power (Rs. 500/-) delegated to him. He can also purchase in the formal way tools and equipments but the subsequent formalities particularly in obtaining the sanction of the Accounts Department under the Chief Accounts Officer, for such purchase, are unusually delayed. As a result, there have been many instances when the spares which had been once available were already sold by the firm when order was placed. This causes dislocation in the urgent work;

(iii) Superintendent of Motor Vehicles is supposed to deal with all office matters including the leave applications of as many as 1800 staff under his establishment. In the present set up, the staff deputed from the

Chief Accounts Officer deal with the monthly salary of Establishment under Superintendent of Motor Vehicles, establishment files of the drivers or chauffeurs and the clerical & subordinate staff. The work-load of the staff deputed from Central Accounts and the office establishment under Superintendent Motor Vehicles is very much different. These staff could be utlised more efficiently for the work of the office of Superintendent of Motor Vehicles, but Superntendent has no control under the present set-up and delegation of power. This creates dissatisfaction amongst the staff working in the same floor of a building.

(iv) No clerical hand except one labour clerk has been sanctioned for the office work in each of the Maintenance Garage although, according to the Corporation manual, many records are supposed to be maintained by the Garage Foreman;

These are organisational defects and should be removd as early as possible.

Work under District Engineers

Efficient working of a transport fleet depends on the utilisation of the vehicles, both in respect of pay-load and the available working hours. Therefore loading and unloading operation of the "Load" carried, is very important.

In the Corporation of Calcutta, District Engineers are responsible for the municipal services, such as, conservency. As it has alread been pointed out that the conservancy service will not be very effective unless the Transport Service made available to the District Engineers are utilised properly. Labour force for collection of Refuse from houses, street corners and the localities is under the disposal of District Engineers. There are as many as 4200 labour only for sweeping roads, watering roads and collection of Refuse from houses, etc. out of this as many as 400 are used for street watering. [Appendix-V, the establishment cost runs upto Rs. 3,40,000 (approx.) per month]

During this enquiry, I have observed that there is enough scope to utilise more effectively the services of the labour force. Considerable time is wasted by the labour force to remove the refuse from the vat as well as on the way as they remain busy in picking up rags, broken metal containers etc. It will be found from the reports of the District Engineers that there is great disparity in the time allotment for house-to-house collection of refuse and the number of labour engaged. With more nmmber of labours, time required per trip has been shown greater in one District (statement enclosed--Appendix-IV). It seems that there is little control on the utilisation of the vehicle engaged for refuse collection. A rigid system of control on this, will help good deal to overcome this problem of refuse collection from the city.

It is also found during enquiry that usually labour are engaged only for 6 to 7 hours in the work. Sometimes it is less. The lorry services, therefore, are not utilised fully. The number of trips according to the Route Chart, mainly for street collection are also not attended in all the District, as a result accummulation of garbage cannot be avoided ; 2 trips are usully attended. The utilisation of the total carrying capacity i.e. Pay load of the trucks, is very poor. The contention will be proved from an examination of the daily records of weighment of the loaded refuse truck in different trips from different Districts of the Corporation at Dhapa Refuse platform.

The present method of work of the refuse collection needs a thorough change. This may be taken up by apporopriate authority. But it may be suggested here in this connection that the unproductive labour in the present process, such as collection and dumping of refuse at one place by one gang of labour and then removal of the same refuse to truck by a second "Gang", before disposal, can not only be eliminated very effectively by the use of Tractor-Trailer combination but the unproductive labour hours also could be cut down considerably if the labour force under District Engineers are utilised properly. It was observed during a study of this problem that the loading of the truck could be easily made (even if the present system of lorry service is favoured and continued) partly with the help of the labour force under the District Engineers. The Motor Vehicles Department shall supply the lorry in time, say at 5-30 A.M. The labour under the District Engineers shall start work at 4-30 A.M. By the time a lorry reaches the area, the labour force should be able to collect consdercrble refuse for a truck and the truck may be loaded partly with their effort.

The present system of collection and removal of garbage has increased the cost of municipal services. As the cost aspect of a particular municipal service is very important, the unproductive labour should be cut down at any cost---may be either by using the Tractor Trailer combination unit or by utilising the labour force more effectively.

Conventional mechanical horse and trailer may also be modified to suit the condition if for any reason the use of trailers is not favoured by the Department. The mechanical horse or a truck will have a suitable arrangement to take a moveable body, i.e, a rail section shall carry the moveable bin on wheels. The moveable bin shall be placed on a fixed rail on brick pillers (replacing the present vat for refuse at street corner). The moveable bin may be pushed on to the rail on the truck and locked by a suitable latch system ; a sketch of the proposed arrangement has been shown in the Appendix-IIA. Thus, the unproductive labour for loading from the vat from different street corners in the city can be eliminated. The unloading at the refuse platform or the dumping ground should be simplified by compulsory use of tipping gear and thus the unproductive labour at that end can also be eliminated.

There should be enforcement of the principal of utilising the available "Pay Load" of trailers or the trucks and therefore these should be loaded upto the limit, and the load shall be distributed evenly. During enquiry at the refuse platform, I found that trucks are sometimes loaded much below the capacity of the truck. The accumulation of refuse in that particular area where the trucks are not loaded upto the limit, may be due to this reason. The statements of refuse carried per truck from different districts of Corporation as given by Traffic Maneger is shown in Appendix. XI (A)

Under the present system, service like gulley pit or cesspool are attended by manual labour. This aspect may be investigated to make this "service" i e. gulley pit and cesspool, more efficient as well as economical in the long run, by use of suitable modern equipments of the type used in other countries.

Disposal of Refuse

The conservancy services consist of 3 parts - (i) street sweeping and collection from houses or street corners, (ii) removal and transportation and (iii) disposal.

In the Corporation of Calcutta, the refuse collected by the labour under District Engineers, are removed by the transport supplied by the Motor Vehicles Department. The refuse are carried upto refuse platform where the trucks are unloaded - in some of the cases by means of tripping gear and in other cases by means of manual labour. When the wagons are placed at the platform, these refuse are unloaded direct to the wagons by any of the means stated above.

Municipal Railway

The municipal railway carry the refuse to a point about 10 miles away for disposal. During enquiry it was observed that the unloading of the truck directly on the wagons are affected whenever the Locomotive service is dislocated or there is derailment of wagons on the truck. This happens very often particularly during the the monsoon. As the efficiency of the Motor Vehicles Department will be very much affected if the Municipal Railway fails to work satisfactorily (in which case the trucks have to be diverted to different dumping ground as otherwise the Refuse Platform will be overflooded with refuse, creating difficult situation). An enquary was also made into the working of the Municipal Railway. From the discussion and subsequent enquiry, it was revealed that the working is far from satisfactory. The Traffic Manager has expressed his difficulties in the efficient working for various reasons. Many of the locomotives (out of 7) are not working satisfactorily which is generally the cause for dislocation. The track, crossing, etc., cannot be maintained efficiently, sufficient number of wagons are not available and the wagongs now in use cannot be worked efficiently as wheels have not been replaced since long. The cost of maintaining the steam locomotive is quite high as will be found from the report submitted by Traffic Manager ; if the other indirect cost is calculated, it will appear to be very much uneconomical.

Traffic Manager has also expressed difficulties in getting efficient staff as the pay of the staff including supervisory staff attached to this department is generally low in comparison to the pay of the staff of comparable responsibility, in other departments.

To achieve the object for which the system of removal of the garbage from the platform to Dhapa unloading point, was introduced, (if this system of disposal is favoured) the municipal railway will have to work efficiently. In order, therefore, to enable the Motor Vehicles Department of the Corporation of Calcutta under the present set-up also work without any dislocation and to achieve their object, the working of the Municipal Railways should be examined very thoroughly by an appropriate authority.

Dumping Grounds

The present refuse platform cannot accommodate all the refuse carrying lorry for purpose of unloading the refuse. The lorries, therefore, have to be diverted to local dumping grounds. The condition of the dumping ground are aweful. If the dumping grounds cannot be maintained properly, the vehicles which go there for dumping are liable to be severely damaged due to negligence of the drivers. From an observation of the method of dumping, it may be said that the vehicles of the Motor Vehicles Department, Corporation of Calcutta, are generally damaged on account of the unsatisfactory condition at the dumping grounds. The Bull Dozers (two in numbers) have been lying out of order and therefore, levelling of the dumped refuse could not be done, creating further trouble.

Maintenance Control : Performance Record Analysis of the different Operational Problem etc.

While examining the overall picture of the Motor Vehicles Department with regard to the provisions in the Budget under different head of Accounts and expenditure on different items, such as spares, lubricants, fuels, tyres, tubes, establishment etc., during the last 3 years, it was observed that records of performance of vehicles have not been maintained. The Department has given me to understand that for want of clerical hands in the different garages, these figures are not submitted regularly by different garages. As a result, the Costing Section which is responsibe for compiling the records and preparing the overall cost analysis, could not make their records upto-date. Therefore, the analytical figure on the consumption of fuel, lubricant as well as spare parts, could not be utilised for the purpose of exercisiug control on the consumption or to enforce effective measure to eliminate the cause for deficiency in the operation in a particular unit. In the proper maintenance of vehicles, the records on the performanc of the vehicles under various units, are a good guide. The cost of replacement of spare parts, etc., are very important not only to know the actual condition of the vehicles, but also is a guide to exercise control over the function of units under it. The records are also very useful to observe if any particular vehicle has been consuming excessive spares and if the performance of the vehicles has been unsatisfactory for a chronic defect on some of the important accessories.

The system of costing and the system of control with the help of analytical figures was introduced at the beginning of the year, 1953. It is not understood how a Department can ensure efficient maintenance and proper utilisation of spares without these records of performance and analytical figures. The Corporation would be benefited in maintaining the performance record of the vehicles and employing the basic statistical data to exercise control on the consumption of spares, lubricants, fuels for such a large fleet operated from so many units.

RECOMMENDATIONS :

Now reverting to the proposition for recommending an appropriate organisational set-up and suggesting methods to improve the overall management of the Department of Motor Vehicles of Corporation of Calcutta, the work has been split up into two distinct line, such as-

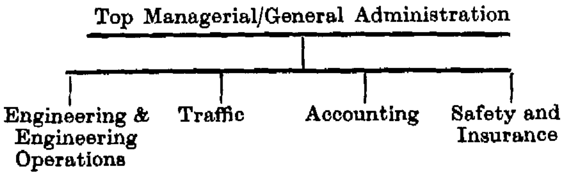
(i) Improvement in the management of the Transport Department as such and reorganising the present set-up with effective control both on the Engineering Operation and Administration.

(ii) Improvement in the working of the municipal conservancy services with the help of special equipments and vehicles designed for conservancy services, instead of the conventional truck--integral body system. Liberal use of the trailer--the motive power may be industrial tractor, suiltable mechanical horse or any other power motive unit even Jeep or Motor Cycle with a cab behind may be incorporated.

ORGANISATION :

Well-planned organisation plays, no doubt, the most important part in the efficient management of a

Transport fleet. Appropriate organisational set-up shall include both the Administrative and Technical side. Although it is impossible to recommend any one set-up which would apply to all Motor Transport Organisation equally, yet it is possible to suggest an organisation with variations and combinations of many, incorporating the main principle of functions. A typical pattern for a Motor Transport Organisation with few Department is as follows :-


Top Managerial/General Administration
Engineering & Engineering Operations
Traffic
Accounting
Safety and Insurance

This Department of the Corporation of Calcutta, although is a Motor Transport Organisation and serves the need of other Departments in carrying the load, yet considering the special feature of the municipal services, cannot follow the conventional pattern of Transport organisation. Very nature of the function of the Department clearly shows that it is primarily an Engineering branch and the management should have strong Engineering background and the ability to control the funtions at various stages with the help of performance records compiled on functional aspects of the automotive units. Engineering and Engineering Operation, however, is always one of the most important Departments even in a typical pattern.

The other branches such as, "Traffic", "Accounting" have no place particularly in this type of Transport Organisation.

There is very little function of a usual Traffic Department as business need not be attracted from other parties or that the rates need not be determined and compiled. Other Departments of a Municipal Corporation utilise the Motor Tansport Service on the strength of an Adminstrative order. In case of the conservancy service of Municipal Corporation such as this, a vehicle of a particular capacity is allotted for a particular area and then few lorry mazdoors are allotted according to requirement. The work of removal & transportation of the garbage including loading & unloading, will depend on the efficiency of the system of control on the work of mazdoors and drivers, effective route chart, proper survey of the load (garbage) in any area. There may be some analogy in this respect with the functions of Traffic Department in a Passenger Motor Transport Organisation such as the control over the work of staff for Operation--Platform staff--Drivers and Conductors, in scheduling, planning new route etc.

Seperate and Independent Department

Usually the District Engineers of a Municipal Corporation are responsible for the effective utilisation of the lorry service but there should be really effective control. It is essentially necessary to organise the Department with overall responsibility for the utilisation of Motor Transport allotted to the Department, like District Engineers, Drainage Department etc., for the various conservancy services. This particular aspect of the problem on which the efficiency of work of cleansing in a Municipal Corporation depend, may be examined by the Committee.

The Department of the Accounting which is essential in all other Motor Transport Organisation has no importance in the pesent set-up of the Motor Vehicles Department. Under the rules of the Corporation, the Department of Financial Adviser and Chief Accountant, does the overall function and the rates for book adjustment of cost for different services utilised by various Departments, have also have been determined under the direction of his office. There is only a costing department independently working under the Head of the Department of Motor Vehicles. Therefore, Accounting department as such, need not be included in the organisational chart. The Safety and Insurance Department, also has not been considered.

The organisational chart recommended is essentially of an Engineering Department. The organisational chart is enclosed (Appendix VI, VI (A) and VI(B). A seperate chart indicating the outline of the work under each unit with note on the limits of responsibility of each of the units in the matter of execution of the work of repair and maintenance, is enclosed (Appendix..VIC). The qualification and experience of different Engineering personnel recommended in the organisational set-up are given in Appendix-VII.

An organisation may be planned carefully and may appear perfect on paper, but the result will not be satisfactory in true measure of organisational efficiency unless it is well-managed. The Executives in all successful industrial Companies make use of the best methods and most modern equipments to get the best results from their respective managerial abilities. The same is true of a well-managed Motor Transport Organisation. Such organisations are constantly on the alert for new ways of reducing the cost of Operation and increasing the efficiency.

In a Motor Transport organisation, jobs in in general are individualistic, needing to be done generally without supervision. Labour are scattered and therefore management become more difficult than in the cases where employment was concentrated at one place. In essence there must be correct organisation before correct management so that the plan of daily work must show a man what he had to do, where he should do and how.

There should, therefore, be proper management methods and records should be maintained for purpose of control and to be benefitted out of it. In theory, if you record everything, you can control everything, but if you carry this to extreme, you can choke Administration to death, spending more in obtaining figure than they can possibly be worth. One cannot dogmatize what records are necessary for any particular operator. He must learn by trial and error what is worth keeping and should be weeded out.

Now with a view to suggest ways and means to ensure efficient management in such an organisation, some of the important points which affect the working of a Motor Transport Department, particularly with reference to the observation during the enquiry, have been covered in the following few broad heads, such as-

1. Standardisation of the fleet ;
   - (i) Rehabilitation of the present fleet, present position and composition of the fleet, redistribution of vehicles to garages to minimise the number of types under one Garage.
   - (ii) Fleet strength required to operate present sanctioned services under the present method of work. Alternative suggestions have been given.

(iii) Programme of replacement of vehicles and fund for replacement.

2. Maintenance Scheme and control on the maintenance work.

3. Remodelling of the workshop and garages and construction of the office of Motor Vehicles Department.

4. (i) Requirement of modern automotive machine tools and equipments, servicing equipments and general machine tools and their utilisation.

   (ii) Work plan of the proceess of work in the Central Workshop.

5. Recruitment of Engineers and Engineering supervisors.

6. Training of staff :—
   - (a) Engineers and Engineering supervisors.
   - (b) Staff-Maintenance, repairs and overhaul.
   - (c) Drivers.

7. Requirement of staff :—
   - (a) Engineering supervisors
   - (b) Staff-Mainatennce, repair and overhaul.

8. Maintenance Control —

   Performance Record
   Analysis of different records for daily Engineering operations.

9. Stores organisation.

10. Suggestions to improve operational efficiency—General improvement of the work of cleansing.

11. Delegation of power.

12. Suggestions for general improvement of the work of the conservancy service—
    - (a) Daily work under District Engineers ;
    - (b) Dumping ground ;
    - (c) Municipal Railway—

1 (a) STANDARDISATION OF THE TYPE OF VEHICLE

Selection of vehicles for the fleet of a Transport Department also plays a very important part in the efficient working of a transport organisation. Addition of too many types or a particular type which is not suitable for the purpose, will ultimately bring enough trouble to the department. One should be guided by the following points while selecting the type of vehicles for the fleet. :

(a) If the vehicle is suitable for the purpose for which it is purchased.

(b) If the design characteristic are good to ensure long trouble-free service.

(c) If the spare parts are readily available and cost of replacement of spares are not disproportionately high.

(d) If the vehicles are very convenient from the point of view of servicing facilities.

From experience of running a fleet, the head of the Unit shall be in a position to exercise his discretion in these matters.

The Motor Vehicles Department of the Corporation of Calcutta have got 501 vehicles including 30 Tractors (excluding Ambulance and Departmental Car) in the fleet comprising of various makes and model. Although the Department has a preference for conventional chassis and integral body for conservancy work, the introduction of "Trailer-Tractor or Mechanical Horse" will definitely go a long way to reduce the work load on the Department for the maintenance as well as to reduce the cost of various (municipal) service considerably. This is the trend of work for the conservancy service—Cleansing Department as it is called in other parts of the world. In India, other City Administration has been following this principle in the matter of selection of their vehicles for the conservancy service. The utility of such a combination can be realised if the position in one of the major city in India is examined

In Bombay Municipal Corporation, the composition of fleet is as follows :-

(A) Tractors, Mechanical Horse & other Motive Units

(i)	Scammel Horses for towing 2.19 Ton Scammel Trailers	 27	Nos
(ii)	Ferguson Tractors for towing 2.7 Ton Ferguson Trailers.	 28	Nos.
(iii)	Jeeps to tow 1.5 Trailers	 7	Nos.
(iv)	Leylend moving floor-integral unit 4.5 Ton.	— 22	Nos.
(vi)	Low loaders-Studebaker -4 Ton	 12	Nos.
(vi)	Low loaders-Bautom Carrier 1.5 to 2 Ton.	 11	Nos.
		107	Nos.

(B) Trailers

(i)	Scammel Trailers 2.19 Ton	 190	Nos.
(ii)	Ferguson Trailers (2.7 Ton)	 29	Nos.
(iii)	Trailers for Jeep (1.5 Ton)	 90	Nos.
		309	Nos.

Therefore, there would not be enough justification to insist on a truck-integral body instead of Tractor-Trailor combination unit, increasing unnecessarily the cost of municipal services.

Redistribution of Vehicles to different Garages

Examination of the disposition of vehicles in different garages will show that distribution of vehicles in the fleet under the maintenance garages, which consist of so many types, has not been done in a scientific manner. The Department should arrange for immediate redistribution of the vehicles keeping in view, of course, the requirement of the conservency service within the jurisdiction of a particular District of the Municipal Corporation in removing the total quantity of the garbage or silt. If possible, only one type should be allotted to one garage. In case it is difficult, for any reason to place only one type, the minimum number of types to meet the requirement for a particular service, shall be allotted to any garage. This will help the Transport Officer (a post which has been recommended in this note) to work much more efficiently. Problem of service, repair and maintenance will be much less and the work of training of the staff—repair-maintenance, which is essential to run the fleet efficiently, will not only be simplified but will also be more effective.

After examining the position of the fleet and the number of laid up vehicles, the following suggestions are given to rehabilitate the fleet within a short course of time without much diffiiculty. These are as follows :-

1. In the fleet of 501 vehicles (as found on 1. 5. 62) as shown in the statement (Appendix-II), there are 136 vehicles including 3 Tractors which belong to very old model.

Utilisation of the present resourses : Rehabilitation of the Fleet

Availability of spare parts for these vehicles of earlier models (136 in number) is very uncertain and the Department has to pay inflated price quite often for the spare parts of these vehicles. Although a vehicle in the Motor Vehicles Department does not cover much mileages in a year, still replacements of some of the essential spares become inevitable after certain mileage. Vehicles of these models have become obsolete by this time in India, with the planned programme of manufacture of vehicles and spares for these models are procured by the Agent after a good deal of effort. It will, therefore, be desirable to condemn all these 136 vehicles as early as possible.

Now out of these 136, 72 vehicles and 3 Tractors have been lying out of commission for more than 6 months and many of the accessories and components have been cannibalised from them in the meantime. These have become a junk and therfore, should be declared as scrapped. The rest 61 vehicles which are still in service may continue to run for sometime more, till new vehicles or Tractors-Trailers are added in the fleet or the system of work of the conservancy service is changed which will ultimately reduce the requirement of vehicles.

Now considering the extremely difficult position in the procurement of spare parts for these obsolete model vehicles, some of which are still in service, components as well as serviceable units may be cannibalised as far as possible from those 72 vehicles lying practically as junk and these spares may be taken into stock in a Sub-Store to operate the rest 61 vehicles of this lot for sometime without incurring much expenditure on replacement spares. It is also proposed that some of the vehicles out of the rest 61 of this lot may be kept in the fleet as stand-by for emergency, for sometime to come. The Department, however, will have to carry out a detailed survey to select the vehicles which they may consider worth keeping even as stand-by. The rest to be sold by auction as a complete vehicle as soon as equivalent number of Motive Units are brought into commission.

II. In the Appendix-IB, it has been shown that some of the vehicles which were purchased after 1955, have been lying out of order for want of replacement spares. As the position of vehicles under the present Motor Vehicles Department, is anything but satisfactory, immediate steps are necessary to make ready some of the vehicles by interchange of parts on some of these vehicles as an emergency measure to overcome the present situation. In the meantime, equivalent number of spares should be indented to make those vehicles ready which will thus remain disabled in the process.

III. The Appendix IB will also show that some vehicles purchased after 1951 are held up awaiting repairs or overhaul to the Engines ; some of the vehicles did not cover more than 15,000 miles. Many of them may be made ready by replacing new spare Engines that the Department may purchase as spare units or Engines overhauled by other Agencies. The Department shall make out a list of such vehicles which are only held up for want of a good Engine.

IV. The process recommended in No. I will solve to some measure the acute problem of space in the garages to carry out the routine operation to run the fleet, efficiently.

V. In order to carry out the programme as suggested in Nos. II and III, the vehicles laid-up should be brought by towing or lifting by a suitable crane from the respective garages, to the old Chingreehatta refuse platform, which is now being converted into a maintenance garage, for operation of the fleet of the Corporation. This space should be converted into a "Base" Workshop purely as a temporary measure till such time this Unit is not ready in all respect to start operation of vehicles from this place. Arrangement shall be made to expedite supply of ready Engines so that these vehicles can be made ready without least possible difficulty by independent effort of another unit which may be set up with few additional staff sanctioned exclusively for the additional work.

By this process of rehabilitation, at least 60 vehicles (excluding Tractors) could be made ready without much difficulty within a very short period of time. This will supplement the effective strength of the fleet of the Motor Vehicles Department. The rest 42 (out of 102 excluding Tractors) can also be made ready by a similar effort. Thus the fleet of the Motor Vehicles Department consisting of 501 vehicles including 30 Tractors (as found on 1.5.62) will then consist of 426 Motive Units 501-(72+3 Tractor); some of which shall remain off the road for routine maintenance, repair and overhaul.

Now, to operate so many vehicles, there should be some spare vehicles (Engineering Spares). Normally 15·/. is allowed in a Motor Transport fleet of this nature, consisting of Heavy Duty and Commercial Medium Heavy Diesel Vehicles. But considering the fact that in the service under the Municipal Corporation of Calcutta, none of these vehicles cover more than 15,000 miles, 15·/. spare vehicles for all the services, particularly other than conservancy, is considered more than fair. As a matter of fact, 15·/. spares should be given for services like Conservancy---Refuse collection, Night soil etc. Even for silt service, Gulley Pit and Brick Sewer, there should not be 15·/. spares---part of the services being attended in the night. Therefore, excluding service like refuse collection, night soil, filter water, 10·/. spare vehicles would be more than enough.

1 (b) STRENGTH OF FLEET REQUIRED TO OPERATE ALL THE SERVICES

Under the present system in the Corporation, various municipal services (lorry service) for conservancy and other miscellaneous work have been sanctioned. There are regular services as well as "temporary services" as shown in the Appendix. IX.

All the approved services and the requirement of vehicles have been analysed in different groups such as conservancy, other essential services like corpse van, carcass lorry, filter water carrier etc. Only for refuse collection, the total number of services including 6 (six) temporary ones, is 241. Number of vehicles required to operate all the 241 services under the present system of working, will, therefore be 241. Similarly for other conservancy (night soil, silt) and essential work like removal of corpse, carcass and supply of filtered water, the total number of services sanctioned is 116.

According to the present arrangement in the Deparment, one vehicle is allotted for eachservice. But as in the case of silt service, major part of the work is done in the night ; only 50./· of the total number of service under this head, may be provided with one vehicle each. The total number of vehicles required for all these services---conservancy and other essential works will be 328. For miscellaneous work, another 36 vehicles are required according to the present system. The number of vehicles necessary for the miscellaneous work, however, can also be reduced considerably by proper adjustment of the work. Now accepting the present system of work, the total number of vehicles required for all these services will thus be 364.

Spare vehicles will be necessary to cover all aspects of maintenances according to the normal practices. The percentage of spare vehicles necessary for different services, has been explained already in this note. Thus the total number of vehicles required for all the services including resonable spares, will be only 418.

While considering the total fleet strength (only lorries and tractor), it has been found that by process of rehabilitation (making allowance for all factors) 417 vehicles including 30 tractors and mechanical horse, will be available for various services (Appendix-VIII). Therefore, the present fleet of vehicles now possessed by the Corporation of Calcutta is considered more than enough. Purchase of additonal new vehicles such as---Truck with an integral body, therefore, will be not necssary. But, when the remaining 37 vehicles out of the lot of 61 vehicles of the earlier model (purchased upto the year 1952), however, will be withdrawn from service, equivalent number of vehicles or number for Tractor-Trailer units with minimum capacity to carry the equivalent load of the total number of the condemned vehicles, should be purchased.

As the position of vehicles in the Motor Vehicles Department at this stage is anything but satisfactory and that the strength is not enough to meet the total requirement under the present system of working, few lorries may be engaged on hire basis to meet the present situation of acute shortage of running vehicles. The requirement of vehicles on hire basis may be assessed on the basis of the quantity of the refuse to be removed per day.

While assessing the requirement of vehicles for various services sanctioned by Corportion, I have considered the present method of allotment under the present system of working. But if the position is examined thoroughly in the light of the observation made on the working of the various Department of the Corporation, it will be very clear ***that actual requirement of vehicles should be much less.***

It has been pointed out that in the present system of working, there is very little effort to utilise the labour forces as well as the "pay load" of the truck, as a result not only the effective working hours of the lorry drivers and mazdoors are very much reduced, but the "pay load" of so many vehicles purchased with considerable sum of money, are wasted. This will be evident from the disparity in the working hours and allotment of labour particularly in course of house-to-house collection of refuse in each of the Districts as shown in the Appendix--IV. This is one of the main cause of the present situation that is to say accumulation of refuse all over the city.

Little more effort of all concerned could have solved this problem of refuse collection and removal very effectively. The following note will show even the present strength of 242 vehicles in the fleet (as found on 1.5.62 subsequently the position improved as 15 new vehicles were added in the fleet and few vehicles which were laid up on 1.5.62, have been made ready) should not have created this situation.

Now let us examine the quantity of garbage that is to be removed from all the Districts of the Corporation including the Cossipur, Manicktola and Tollygunge area. According to the Chief Engineer, the estimated quantity of garbage removed per day on an average is nearly 2100 Tons [Appendix--XI (B]. Estimated quantity of Refuse that should have been removed on a particular date say 1.5.62, on the basis of the allotment of vehicles for differet services such as house-to-house collection, house-to-house and street collection combined and street collection exclusively in different District, as per statement of the District Engineers, the number of trips according to the route chart statement of the allotment of vehicles given by Motor Vehicles Department (as found on 1.5.62) and allowing all factors that affects the normal working, comes to 1766 Tons--the number of vehicles (of the Department) utilised on that date including few on double duty was 200. The statement is given in Appendix-XI. Now from this statement it will be found that the number of vehicles engaged for house-to-house collection (including those on combined collection) were 89. Each of these lorry services, attended only 2(two) trips working between 6 to 7 hours; in some cases the time spent was much less.

Now, if these 89 lorry services were made to run another trip for street collection of refuse (in case of street collection the normal time for loading of the truck, journey from the area to the dumping ground or refuse platform, unloading at the refuse platform with tipping gear, is not more than 2 1/2 hours) to remove the garbage, the working hours for these services generally would not exceed more than 9 hours. Of course enforcement of discipline in the work of collection, removal and transportation of refuse will definitely bring down the time spent per trip at the present stage. It may be mentioned that previously all these services used to cover 3 trips except in cases of Break-down of a particular lorry. Thus with additional one trip per vehicle, 89 trips could be introduced to remove the garbage.

Considering on an average 3 trips per truck, this additional 89 trips will be equivalent to complete work of 29 vehicles per day. Considering average loading of 4 Tons per trip per truck (5 Ton truck are now generally used), the additional quantity of refuse that will have been removed per day is 356 Tons. Thus this additional quantity and the quantity that may be removed (estimated on the basis of the figures as on 1.5.62) will bring up this total to 1766 + 356 = 2122 Tons).

The lorry drivers and the mazdoors of these lorry services should however, be paid special allowance as an incentive to this extra work and effort. The following calculation will show how economical it will be to introduce this system (if it is at all difficult to bring the previuos system of working of 3 trips per lorry service in all cases, in the usual course).

In connection with payment of special allowance, let us consider that each of the drivers shall be paid 0·75. nP. and mazdoors at the rate of 0·37 nP. per day per extra trip. Calculating the cost on this basis it will be found that there is no justification to purchase additional number of new vehicles at this stage.

The calculation is as follows :---

A)	Each driver to be paid	.... At the rate of 0·75 nP per trip.
	89 drivers to be paid	.... 0·75 x 89 i.e. Rs. 66·75 per day per trip.
	Therefore for 30 days	.... Rs. 66·75 x 30 i.e. Rs. 2002·50 per month.
B)	Each Mazdoor to be paid	.... At the rate of 0·37 nP. per day per trip.
	Considering 5 Mazdoors to be engaged per truck, the total amount to be paid per truck per day.	.... 0·37 x 5 i.e. Rs. 1·85
	Per month of 30 days, the amount to be paid.	.... Rs. 1·85- x 30 i.e. Rs. 55·50
	Therefore for 89 Trucks, the amount to be paid per month.	.... Rs. 55·50 x 89 i.e. Rs. 4939·50
	Therefore the total amount to be paid as Special Allowance for additional one trip for 89 trucks per month	.... Rs. 2002·50 + 4939·50 = Rs. 6942/-

On the other hand if 29 trucks were operated, the total expenditure only on establishment (excluding the cost of establishment for maintenance of vehicles) will be as follows :-

(i) 1 Driver at the rate of Rs. 140/- (average pay including allowances) per month. = Rs. 140/-per month

(ii) 5 Mazdoors at the rate of Rs. 70/- (average pay including allowances) = Rs. 350/- per month.

Therefore per truck per month .... Rs. 140 + 350 = Rs. 490/-

Therefore for 29 Trucks, the amount will be. .... Rs. 14,210/- per month.

For an extra run of 10 miles per truck on an average for this additional one trip, the cost of High Speed Diesel Oil will be nearly Rs. 7,000/-.

Therefore, there will be no justification to purchase another 29 vehicles at the rate of Rs. 29,000/- per Chassis at a cost of Rs. 10,00,000/- (approx.) including the cost of body, registration etc.

Now, on examination of other aspects of the work of cleansing in the line of the observations in this enquiry, it will be found that there is enough scope for improvement in the work of conservancy services particularly, refuse collection. These methods will improve further the position, consequently the requirement of vehicle can be reduced further. These are as follows :

1. Liberal use of Tractor-Trailer combination Unit.
2. Redistribution of vehicles according to the load and revision of route chart in each area by a fresh survey of the actual position of accumulation of garbage.
3. (a) Uniformity in the work of collection and removal of garbage in all the Districts and enforcement of discipline in the work to maintain the previous Route Chart.
3. (b) Working of a small percentage of the fleet allotted for refuse collection in another shift by proper scheduling i.e. the timing of the vehicles in the 1st. shift.
3. (c) Utilisation of a small percentage of fleet allotted for silt and miscellaneous services to remove part of the refuse from some of the areas in the early hours in the morning when these vehicles are not *utilised otherwise.*

By the use of tractors and trailers---27 tractors and 3 mechanical horses and the existing trailers, there will be some spare capacity to carry more load in case of emergency in any of the areas. These 30 Motive Units in the fleet should carry additional load of 60 x 2.5 Ton (one Motive Unit shall pull at least 3 Trailers) which is equivalent to the carrying capacity of another 12 Truck of 5 Ton capacity, carrying 4 Ton on an average and working for 3 trips.

Now looking at the other side of the problem, it will be seen that the estimation of load as given by Chief Engineer is rather on the high side. The amount of refuse removed say from District--III as per figure given by him, is 500 Ton, whereas estimation on the basis of the capacity of the vehicles and Route Chart for that District, making allowance for all factors in the loading of each truck in each trip, the maximum amount of garbage removed comes to only 409 Ton. According to Chief Engineer, there is no complaint of accumulation of garbage particularly in this District. Thus *the contention in this note* has been established.

The contention will also be established if the statement of load carried per truck as determined by weighment at the Dhapa Refuse Platform is also examined. A statement has been given by the Traffic Manager showing the position on 3 days in the month of June '62. If the statement is analysed it will show the extent of disparity in the quantity of refuse carried by truck of the same capacty in different trips, difference in the quantity of refuse carried by trucks of the same capacity from different Districts.

From the consolidated statement it will be found that nearly 100 vehicles were unloaded at the refuse platform on any of these dates. The quantity of garbage carried by these vehicles in 218 trips (with majority of the vehicles of the capacity of 5 Ton) was much less than the rated capacity of these trucks. At least another 100 Tons of garbage should have been removed per day (considering average loading of 4 Ton). In some of the cases, a particular vehicle comleted 4 trips but the total load caried is equivalent to 2 trips.

Therefore the observation that little more effort and enforcement of discipline in the work of the collection and removal of refuse, will solve the problem to a great extent rather it will bring an overall improvement in the position, is very correct.

Programme of Replacement of Vehicle
Fund for Replacement

In the Motor Vehicles Department there should be a regular programme for replacement of vehicles. This is necessary for the following important reasons :

(a) Addition of new vehicles in the fleet according to a regular programme, shall help to maintain a balance in the workload for maintenance & overhaul.

(b) This will help to maintain a balance in the cost of operation particularly the maintenance cost, as the cost of replacement of spares, cost of Lub. Oil etc. will be negligible in a new vehicle, whereas the cost is very high in case of old vehicles.

While selecting vehicles for the Conservancy Service, the cost of the various Municipal "Services", should not be forgotten and therefore any type which is likely to increase the cost of operation, shall be avoided carefully. Too many types should also be avoided for the following reasons.

(i) Too many types shall bring in the problem of obsolescence of spare in greater intensity due to the complication in maintaining stock of fast moving spares.

(ii) The problem of storing spare parts for too many types will be much more.

(iii) The problem of training mechanical staff to handle a particular type will be much less.

All these important points shall be kept in view.

Vehicles have been designed specially in other countries for conservancy service. It may not be possible to import any of these at this stage, but we can utilise our experience in selecting correct type of vehicles available in India. Medium Heavy Duty Commercial Diesel vehicles or Diesel Tractor-Trailer unit, will be very suitable for this purpose ; preference, however, should be given to tractor-trailer uuit not only on account of very high price of the medium Heavy Commercial Diesel vehicles but also from the point of view of the low cost of operation of the municipal services.

In the tractor-trailer combination, number of motive unit to remove the same quantity of garbage, will be much less as one motive unit can operate at least 3 trailers. By the use of tractor-trailer, the cost in respect of labour for loading & unloading at vorious stages will be much less.

But in case the conventional chassis with integral body, is preferred, steps should be taken to make more effective utilisation of these costly vehicles.

Under the present system of working of various municipal services of the Corporation of Calcutta, a vehicle covers less than 15,000 miles per year--a vehicle runs only 40 miles per day on an average. Considering the fair useful life of Medium Heavy Diesel vehicle to be more than 2,20,000 miles, it will take more than 15 years to make full use of the equipments purchased at a considerable amount of money. Considering the present trend of development of automobiles, it may not be reasonable to keep a vehicle in service for more than 15 years as procurement of spares for these vehicles will be a problem after some years while there is a gradual improvement of the type and model. The question of obsolescence of spares is also there, when the vehicles will be withdrawn from service. Moreover, large sum of money to be spent for the purchase of these vehicles should have better outturn per year. From consideration of these important points, the utilisation of the vehicle should be much more scientific. This is only possible if the mileage outturn per year is improved. In order to achieve that, the present system of working will have to be changed and a certain percentage of vehicles should be used for 2nd. shift working. If that is done, the total mileage per year may come upto nearly 30,000. In that case the useful life of the Medium Heavy Diesel Vehicles will be fully utilised and depreciated within 8 years.

Fund for Replacement

While examining the method of replacement of vehicles, it was found that there is no system of depreciating the rolling stock, such as the vehicles of the Corporation of Calcutta. There is, however a fund which they call "Insurunce Fund" which were created sometime ago to meet the claim in case of major accident with other party. It is understood that money is not contributed to this Fund every year and that there is a limit for this Fund. In the absence of any depreciation fund, the Department cannot draw up a programme of replacement of vehicle so long regular fund for purchase of vehicles, is not provided. If the depreciation fund is created there will not be much difficulty to enforce a regular programme of replacement of motive unit (Vehicle or Tractor-Trailer) on the basis of the life determined carefully on the past experience. If for any reason extra fund is available either from the General Budget or from the Loan Budget of the Corporation during a year, the depreciation fund will not be utilised to purchase vehicles for that year.

2. MAINTENANCE SCHEME & CONTROL ON THE MAINTENANCE WORK

Rising cost all over the world are forcing fleet operation to review their maintenance method not only to increase the life of their vehicles but also to reduce the cost per mile of keeping them running and to reduce the number of break down on the road.

There is of course no single system of fleet maintenance suitable for all fleets. However, many fleets have achieved a considerable measure of success in reducing maintenance cost through use of variations of several basic system.

There are generally two basic systems of maintenance (i) Preventive maintenance. and (ii) Controlled maintenance. Both have met with considerable measure of success varying from fleet to fleet and depending for their success on the amount of effort expended on them. There are many variations and combinations of the system and each fleet has to decide which system to use, how to vary it to suit its own operating condition.

Preventive maintenance consists of a programme to make sure that specific inspection and adjustment are made at regular planned intervals. It was never the intention to include repairs to the vehicles. The main idea is to establish a consistent procedure for cleaning, adjusting, tightening and lubricating.

Studies have shown a need for grouping of the inspection work in different phases. Certain operations with number in each group or individual inspection, are required at each of the stages.

The maintenance scheme of a particular fleet, shall depend primarily on the nature of service and mileage covered per day. For the fleet in the Motor Vehicles Department of the Corporation of Calcutta, the average mileage par day for conservancy services including the diversion to different dumping grounds, when refuse platform at Dhapa is unable to accommodate additional load, comes to about 40 miles per day.

Equipments and accessories of a modern automobile require attention at a certain period to avoid total failure. The routine check-up and adjustment of lubrication of various points under the preventive maintenance scheme, will increase the life of accessories and components. Replacements of major units need not be carried out exactly at a certain mileage unless the performance demands it.

According to the average mileage, the vehicle in a Motor Vehicles Department, should be brought under maintenance at a certain period in addition to the routine check-up of the defects to keep them running in good order. For this purpose a maintenance scheme showing the cycle of the inspection and items to be attended are given in the Appendix-XII, XIIA, XIIB. To ensure troublefree running, repairs to minor defects which are noted by the Driver in course of duty, should also be attended carefully. In order to ensure that these defects are attended properly, a record should be maintained to note the "Report and Remarks on the Running Repairs" against each vehicle. The operators-Drivers should be insisted upon to submit report of any defect, they might notice in course of duty on a vehicle. For this purpose proforma (Appendix-XIIC) is suggested which would help the Driver, most of whom are illiterate, to submit a report to the Officer in-Chare of Garages.

3. Remodelling of the Garages Workshop and Construction of the Office of the Motor Vehicles Department

(A) The accommodation in any of the garages is not sufficient for the present strength of vehicles. If, however, some of the very old vehicles lying out of commission since long, are removed from each of the garages, more space will be available. The garages none of which was constructed for the purpose, are not suitable for efficient maintenance and operation of a transport fleet. Necessary modification should be carried out according to the requirement, gradually, to ensure unrestricted flow of vehicles inside the garage from one maintenance operation to another, so that the vehicles may be made ready for the different services next day without much difficulty and that there is no difficulty in sending them out for different services according to the schedule.

(B) Work of Remodelling shall be taken up in phases. To start with, the following should be done.

(i) Pits for Servicing and Maintenance should be constructed at the Ist. stage. Arrangement for sufficient lighting inside the pit to enable to carry out repair work in the night shall be made. There should be arrangement for supply of High Pressure Air in the Pit.

The total number of pits for Servicing and Maintenance of 130 vehicles in a garage of this organisation, should be 6.

(ii) Arrangement for washing of vehicles :-

For the purpose of washing half raised ramp and half pit type construction will be very suitable. The number of pit for washing, should be 4.

Arrangement for washing should include supply of sufficient quantity of clean water. For this purpose either a Tube-well may be sunk and overhead tank shall be constructed to maintain proper supply of water to the High Pressure Car Washing Machine.

(C) The store in each of the garages should be reconstructed to enable the Controller of Stores to keep some of the essential fast moving spares for use in case of emergency. This will help to ensure efficient working of the transport fleet.

(D) It has already been discussed that there is practically no security arrangement in any of the garages. The residentail quarters and work-site being in the same compound without any boundary wall in between. Steps should be taken immediately to ensure proper security of the properties. There should be a demarcation with proper boundary wall between the two.

(E) Office---Motor Vehicles Department--There is no office for Motor Vehicles Department. The efficiency of an office depends on the accomodation and environment. Once it was proposed that the office building will be constructed, but this matter does not appear to have been persued. As the vehicles of the Central Garages will be removed to the Refuse Platform at Chingreehatta, there will be enough space left in that compound. Even providing adequate space for extension of the workshop, office of the Motor Vehicles Department may be constructed. A suitable design may help to accommodate the office in the 1st floor, staff quarter for Superintendent of Works, Rolling Stock Engineer, etc. (post recommended) in the 2nd floor. Parking and other servicing and inspection pit may be conveniently built on the ground floor. Such type of construction is essential considering the value of land inside Calcutta.

(F) Workshop---The workshop should be reorganised. Space available in the ground floor may be utilised for installation of heavy machineries that will be purchased in the near future. Units may be assembled in the 1st floor. The full height inside the building should be utilised by constructing another floor on the rest of the portion where there is no floor at the moment. For the Fuel Injection Equipment Servicing Section, suitable space shall be provided and a room which should be dust free shall be constructed making necessary arrangement for fitting suitable number of exhaust fan to providecirculation of air.

Machine Tools and Equipments

The workshop has not been equipped with modern machine tools required for precision automotive work. The garages have not been provided with modern servicing and other equipments. The Lathe and other machines which were installed long time ago, are not capable of producing precision job. Recommendation for purchase of machine tools, to start with, has been given in Appendix--XIII.

The organisation should be careful in making selection of Machine Tools before those are purchased, so that that there is no difficulty in operating the machines due to lack of knowledge of handling a machine from a particular country abroad and that there is no difficulty to carry out necessary repairs in case of any defect either for lack of spare parts or a service organisation in India on behalf of the manufacturer of Machine Tools.

Utilisation of Machine Tools in the C/W. and Control on the Turn-over and Overhauling of Units and Chassis.

The organisation should be able to apply elementary principle of production control as is done in a manufacturing concern. The work should be distributed according to the work-load determined on the total fleet and type of work that are required to be taken up to run the fleet efficiently. If required, there should be time study to ensure efficient turn-over by each of the Machine Tools. A broad outline of the plan of working in the workshop in shown (Appendix XVI).

The organisation should be capale to work out the work-load and set-up the "Overhauling section" in general in such a manner so that the output is standardised and can meet the demand of the organisation. The work should preferably be distributed among the mechanics according to their skill in respective branches, e.g., a man skilled in engine overhauling should be utilised only for overhauling of engine. There may be a system of rotation to improve the general standard, but it should be limited to few.

Recruitment of Engineers and staff for Engineering supervision

The Engineering Department should have qualiffed Engineers as well as experienced Foreman to carry out the work of maintenance and repair to keep the vehicle in good running order. The department should also be able to keep pace with the developments in the field of Automobile and Road Transport Engineering, in other parts of the world.

The department may have difficulty in getting qualified Engineers specially trained for the job. Similarly, personnel for Engineering supervision and technicians for the maintenance work suitable for particular trade, may not be readily available.

Experience is a great teacher but the personal experience method of learning when depended upon entirely, is slow and costly. Therefore, a training programme has been found to be distinctly profitable. Management must train man in the best ways to perform their duties in the organisation. Management has greater knowledge, experience and time for analysis and should convey to the personnel, as needed, the results of this knowledge, experience and analysis.

Apprentices in all sphere of activities, should accordingly be recruited with basic knowledge in Engineering for this training scheme. The method of recruitment shall be effective in selecting right type of personnel. There should be a strong Selection Board consisting of top Management of Commercial organisation and senior technical personnel from various organisation.

TRAINING OF STAFF

(A) Engineers and Engineering Supervisors : Staff for Maintenance and Repair.

Training of Engineers, Engineering Supervisors Mechanics & Drivers can easily result in greater saving than any other single aspect of fleet maintenance. Ideally training should start with Engineers and Engineering Supervisors so that they can pass on the results of their training to the member under them. Fleet operators in this country will have to develop its own training system for supervisory personnel as organised supervisory training is difficult to find at this stage in India.

The training scheme shall include training of freshly recruited Engineers and Engineering Personnel for supervision and also for the technicians in various trades. Such system of training in the organisation will not only help to raise the stanard of work by giving refresher course to the staff who are deficient in their trade but will help these staff in understanding the policy of the Department.

(B) Training of Drivers

Driver's Training Course is a special activity but is equally important. Drivers can have a tremendous effect on fleet operating and maintenance cost. They can not only reduce the fuel consumption but can also by proper and careful operation, reduce the wear and tear on the vehicle and, of course, reduce loss by accidents. Accident prove Drivers must be weeded out.

Now, only the Drivers recruited freshly should be given training in proper handling of the vehicles but there should be Refresher Course so that the Drivers who are once found to be below standard, may get a chance to make up their deficiency in the trade.

The programme of Training and the curricula for both the Schemes shall be drawn out by the appropriate authority of the Corporation.

REQUIREMENT OF STAFF

(A) Engineer & Engineering supervisors

The Department is runnning short of experienced Engineers & staff for Engineering Supervision since sometime past. Many of the posts have been lying vacant since long and could not be filled up for want of suitable personnel. Even if these posts are filled up, the strength may not be sufficient for the present set up of the organisation as there is no arrangement for leave reserve. For Engineering Supervision, there should be at least one more post in the rank of Transport Officer in addition to total requirement of 4 i.e., one each for all 4 Garages and that there should be another post of Works Foreman for the Workshop & Garages as leave reserve. While recruiting the staff, qualifications & experience laid down should be followed as far as practicable.

(B) Staff for Repair & Maintenance.

With regard to the staff for repair & maintenance, the total number of staff on roll may appear to be very much inadequate but on the basis of the effective fleet, the present strength may not be too inadequate. The staff ratio for maintenance & repair should be fixed on the basis of effective vehicles. The condition of service and the leave rules should be taken into consideration while assessing the total staff requirement for repair, maintenance and overhaul. Due to the introduction of the E.S.I Act, the total strength of staff will have to be increased to some extent to compensate the total number that may be on leave on medical ground.

At this moment, however, as there is considerable backlog, additional staff should be recruited on temporary basis to pull up the arrear work. Thereafter staff should be retained in the ratio of 0.6 per effective vehicle in the fleet i.e., excluding those lying out of commission being under overhaul or major repair (while considering this the strength of Ambulance Car & car for departmental use, have been excluded).

To maintain the Ambulance car and cars for departmental use, the staff ratio per vehicle should not be more than 0·4 and therefore for 60 vehicles there should be only 24 staff.

Staff required on the basis of staff ratio at the rate of 0·6 per vehicle for the total ultimate fleet, say 432(417 + 15 new vehicles to be added shortly) will be 303 including 24 for maintenance of ambulance car and cars for departmental use and 20 for maintenance of trailers. Thus the total staff available for maintenance of motive units will be 259. Normally there should have some provision for leave reserve or additional staff to compensate the strength that may be on leave for various rersons including those under the provisions of E.S.I. Act. But the total staff has been assessed on the basis of total fleet strength. So long some of the vehicles in the fleet will be off the road for overhaul and major repairs say 5 % out of 452, the provision of 0.6 staff per vehicle on the total fleet, will compensate the number on leave for various reasons. The additional 31 hands representing various trade, should be recruited gradually to build up the strength of staff under this reorganisation scheme. The requirement of staff on the basis of the fleet, is shown in Appendix--XIV.

Control on the Maintenance and Performance of Vehicles

Good maintenance of vehicles may be ensured in two different methods (i) Preventive maintenance (already suggested), i. e. by physical checking--cleaning, adjusting, tightening and lubricating at pre-planned mileage, (ii) Controlled maintenance-in this system more sophisticated use of records of performance etc., better inventory control etc., is made. Records are analysed to find out if the performance indicate any necessity for a major repair or replacement of part.

With the help of the records the head of the unit can only know the rate of consumption of spares, the M. P. G. (fleet average) Fuel and Lubrication Oil under different units of the oragnisation. With the help of the basic data, the operational problems can also be analysed. It is only with the help of these figures, Management can compare the performance of one unit with another situated at different places.

The abnormal behaviour of a vehicle can also be easily noted by means of the comparable records of the performance and only then a correct approach to the problem is possible. The cost per mile for fuel, lubricants, spare parts, tyres and tubes are also a good guide for the Department to ensure that the standard of maintenance is not very low and that a particular unit, i. e., Maintenance Garage, is deficient in respect of maintenance on a particular aspect.

The Department should develop this branch as one unit as a means to locate the defects in the working of any unit or the Department as a whole. The statistics on the basic problems should be maintained according to the nature of problems in the organisation and should be developed based on experience. There cannot be hard and fast rule or standard for all types of fleet. In order to make it an useful system, the following records may be maintained to start with.

(a) The Route Chart of each of the services from an Area upto the normal place of disposal (unloading) should be reviewed whenever there will be a change in the Route Chart.

(b) Daily mileage cover per vehicle shall be recorded in a progressive mileage sheet per vehicle so as to determine the cumulative mileage at any stage.

(c) The total mileage covered per day by the fleet in any Garage (a copy of the statement prepared shall be sent to Superintendent, Motor Vehicles) shall be verified by the Garage-in-Charge comparing it with the standard mileage per day for all the services under one garage and the M.P.G. of fuel consumed (petrol/diesel) shall be determined. Consumption of fuel--petrol/diesel M.P.G. individual vehicle and fleet (average) and cost per vehicle mile, shall be calculated over the fleet (average). The record shall be maintained in every garage as compulsory data.

(d) Consumption of Lub. oil of individual vehicle and fleet (average) both and cost per vehicle mile (petrol/diesel vehicle) fleet (average) shall be compiled. Figures shall also be maintained in each garage as a compulsory data.

(e) Cost per mile of spare parts only (excluding miscellaneous stores such as ordinary nuts and bolts etc.) type-wise shall be calculated. Costing for individual vehicle is not necessary. The actual issue of spares may be posted in the history book to compare performance and to determine the cost if required, at any time for the purpose of establishing if it is economical to run at any stage.

(f) Time required for each service in each trip should also be recorded and utilised effectively. There should be provisions for recording the exact time for the removal, transportation as well as unloading at the usual disposal ground.

(g) Nunmber of break-down under each unit per day and per unit of mileage, say per 1000 miles of run per vehicles should be recorded.

(h) (i) Tyre mileage card for every tyre ;
  (ii) Record of the movement of tyre on every vehicles ;
  (iii) Cross reference for tyre equipment in each and every vehicles shall be maintained.
  (iv) Tyre mileage for individual tyre discarded ; [For each garage
  (v) Percentage of tyre retreated ;
  (vi) Average mileage of tyre. (a) New life
    (b) Retreated

(i) Comparison of the life of different units of Vehicles :
  (a) Engine
  (b) Gear box
  (c) Batteries
  (d) Fuel pump
  (e) Brake lining
  (f) Clutch lining etc.

For the purpose of recording the mileage and movements, individual cards for each of these units, shall be maintained.

Store Organisation

A Store attached to the Transport Department plays a vital part in the efficient management of the fleet. The Store Department should not only be capable to procure spares when these are indented by the consuming Department, but should also be able to foresee what should be the minimum stock of the fast moving spares keeping in view the obsolescence of parts inventory. In a transport organisation, therefore, the Store should be under the control of a qualified Mecnanical Engineer preferably with experience of maintenance and servicing, when he will be able to indent the spares and will be able to foresee the requirement of the future. He shall also be able to maintain stock of fast moving spares keeping eye on the obsolescence of parts.

In order to run the Transport Service efficiently, there should be spare units. For a fleet of this nature where vehicle cover annually only 14,000 miles, the following limit may be adopted in purchasing a spare units.:

(a)	Engine	4% (max.) on the total number of Engines.
(b)	Front Axle	1%
(c)	Rear Axle	1%
(d)	Diferential unit	2%
(e)	Gear Box	3%
(f)	Comp. Cylinder Head	5%
(g)	Fuel Pump	4%
(h)	Steering	3%

The Store should have sufficient space to arrange the spare properly in the respective bins. For spare parts, there should be no less than 77,000 bins (pigeon holes of of the size 10" x 12" approx.) for an effective fleet of about 450 (truck). There should also be suitable rack for storing tyres. The Store should be able to supply promptly sundry stores which are required for maintenance of the body etc. The Store should be capable to supply the various grades of lubricants used in connection with the maintenance of vehicles, The Store should also be capable to supply Tools and Implements required for repairs and maintenance.

An engineering Store of a Transport fleet apart from the function of indenting, procuring and storing of materials should be in a position to maintain spares in good condition by taking care so that the spares are not damagad due to formation of rust. Automobile spares many of which are very precision work, and which are imported from abroad, have to be preserved very carefully. Corrossion in any portion of the components may make a spare completly useless.

The position of the Store in respect of the position of the General Workshop, is very important to avoid unnecessary loss of hours in material handling. The position of Store should be so selected as to avoid the criss-cross movement in taking the material from the Store to the Workshop floor. In the present position of the Motor Vehicles Stores (shifted to a new place) this object, however, cannot be achieved, but if the store is arranged properly, this will help to some extent in the progress of work in the Motor Vehicles Department.

(a) Suggestion to Improve the operational efficiency of the Motor Vehicles Department.

(b) General Improvement on the work of Cleansing.

I. The problems in daily operation of various services, particularly the conservancy service, has been discussed and few suggestions have already been given. Till such time the remodelling of the garages is not possible to facilitate movement of vehicles inside the Garage to carry out various oparations to make the vehicles ready for the services early next morning, steps may be taken for refuelling of the vehicles on the previous day. As the mileage covered per vehicle is small in comparison to the capacity of the Fuel Tank, the refuelling of all the vehicles need not be done everyday. The topping up of radiators and checking the Engine oil, checking the tyres (by rodding) should be carried out daily. By a suitable programme, therefore, the pressure of work for refuelling of vehicles can be reduced considerably and it will also be possible to ensure early release of the vehicles for the services which is at present a serious problem.

All the vehicles for conservancy service should be released early in the morning, say by 5-30 A.M., so that there is enough time to carry out Inspection and Servicing of the vehicles according to the programme in the afternoon and if part of the conservancy service is operated also in the afternoon, the existing strength of fleet may serve the purpose by mere adjustment of programme.

II. While discussing the necessity of a Regular course of Training and Refresher course of Drivers, it has been pointed out that proper handling of vehicles is essential to run the fleet efficiently as well as to reduce the cost of maintenance. As there is practically no control over the work of the Drivers after they are out for work in respective areas, a section may be organised with suitable staff, who will check up the activity of these Drivers when they are engaged in their work, particularly when they will go to unload their lorry at the Dumping Grounds or Refuse Platform. It has also been pointed out in my observation that careless handling of the vehicles at the dumping grounds are causing much damage to the vehicles of the Corporation of Calcutta. These staff who should be called "Service Inspectors" should be provided with Motor Cycles as in the case of Water Works Department. Any case of bad driving or case of mishandling, detected, should be reported to the Department for appropriate action against Drivers. The services of the "Service Inspector" may also be utilised to check up the work of loading and unloading as well as unnecessary detention of vehicles due the unauthorised rag picking etc. by the lorry Mazdoors.

III. Although necessary arrangement has been suggested for washing of a vehicle inside the garage, it will be desirable to make an arrangement for a perliminary wash and disinfecting of the body of the vehicles of the conservancy services at the Refuse Platform or at a convenient place at the outskirt of the city before the vehicle enters the garage after unloading the truck. This is considered necessary to keep the atmosphere inside the Garage clean. This is also considered necessary from the point of view of sanitation.

IV. In my observation it has been pointed out that the work of the Motor Vehicles Department is dependent on other Departments, particularly, the District Engineers of the Corporation. To ensure that (a) the vehicles are loaded uniformly in all the trips, the work of sweeping of the street in the respective areas should have relation with the allotment of vehicles to respective areas according to to the route-chart. As it has been suggested that the vehicle should reach the respective area at 5-30 A.M., the work of cleaning by the labours in the respective areas should, therefore, start by 4-30 A.M.

(b) The total working hours of the Drivers and lorry Mazdoors in most of the cases have been found between 6 and 7 hours. In some cases, it is less. Their services should, therefore, be utilised for 8 hours working and if required, for extra time on payment of special allowance as incentive for the additional work.

V. Even with the most effective and efficient maintenance system, break-down of vehicles on the road for mechanical failure cannot be eliminated altogether. In order to avoid unnecessary loss of hours on the road for these vehicles there should be an organised section to attend to the road-call promptly. Moreover, as the vehicles of the Corporation are required to unload the refuse at the dumping ground where the condition generally is not satisfactory, vehicles are badly stuck-up for which arrangements have to be made to recover the vehicles. To meet such situation the department should have a "Recovery Vehicle" equipped with suitable arrangement to lift the vehicles from the place.

In the organisational chart provision has been made for a section to look after Breakdowns on road, in each of the garages under the Garage Officer. The recovery vehicle fitted with lifting crane and winch should be kept in the workshop which is located in the central place, In each of the garages one vehicle may be kept for towing the vehicles back to the respective garages in case of emergency when the defect cannot be rectified on the road. On the otherhand one Mechanic Squad with one Mechanic Driver and one helper shall be maintained in each garage. They will be provided with a Motor Cycle with an attached 3 wheeler van. This unit shall attend to the road call for minor defects. During their leisure period their service shall be utilised for repair maintenance inside the garage. In case of Break down due to Tyre Puncture, tyres may be carried in any of the lorries that will be avaiable as spare.

Delegation of Power to Enable the Head of the Unit to Discharge the Responsibility

Superintendent of Motor Vehicles Department who is the head of the Office has not got sufficient power to take disciplinary action against the staff i.e., he cannot punish a defaulter. As responsibility without power cannot function, Superintendent of Motor Vehicles Department could not possibly enforce discipline and make the unit an efficient one. The Committee may therefore, consider if the head of the Motor Vehicles Department should be given the power (i) to appoint all staff except the officers---Engineering as well as Administration, (ii) to take disciplinary action and discharge his employee depending on the nature of offence and on the merit of the case. The appeal may be made to the Appellate authority. If this is not done there is very little scope to improve discipline in the Department.

Suggestion for Improvement in the Work of Conservancy Service under District Engineers etc.

While examining the working of the Motor Vehicles Department, few observations were made on the work of some of the Departments which have to depend on each other for the day-to-day work; such as (i) work under the District Engineers, (ii) The work of unloading at Dumping ground, and (iii) The work of the Municipal Railway to carry the refuse from the Refuse Platform to Dhapa Disposal ground.

In order to ensure proper loading of the truck and to ensure proper utilisation of the vehicles placed at the disposal of the District Engineers, there should be an effective control on the work of collection, removal of refuse and transportation to the disposal ground.

A seperate Organisation for the Work of Cleansing, Removal & final Disposal

Now, apart from the suggestion to use Trailer and Tractor combination which will definitely cut down the unproductive labour, there is enough scope even in the present working under the District Engineers and Motor Vehicles Department, in the collection and removal of refuse from various street corners and houses.

It has already been pointed out while discussing the position in my observation, that the Trucks are not loaded upto the limit. Moreover, there is no control on the working hours of a Driver or the lorry Mazdoors in a particular service. It may be necessary to set up a Department which will take charge of Lorry immediately they are out from the Garages, in good mechanical condition.

In the system of house-to house collection of refuse there is also scope for improvement. Suitable equipments to improve the working as have been adopted in other Western countries, may be considered.

Dumping Ground

The Corporation of Calcutta has both the system of disposing refuse - (i) to the disposal ground at Dhapa by Municipal Railway and (ii) disposal of refuse at local dumping ground in and around the city.

In case of dumping at the local dumping ground, in and around the city, the method should be controlled dumping or sanitary fill, as it is called in other parts of the world. This aspect should be examined seperately by the Committee.

For dumping at the local dumping grounds, steps should be taken to avoid wilful damage to the truck. For this purpose approach road should be built and there should be control on the work of unloading as already suggested. Temporary road with the help of "Steel mat" should be built so that the vehicle may not have any difficulty to reach the unloading point for releasing the load. The refuse thus unloaded should be spread over the dumping ground with the help of Bull Dozer. The present condition as has already been pointed out in my observation, is not only unsatisfactory, but is a source of damage to the costly vehicles of the Corporation.

Municipal Railway

The condition of the Equipments under the Municipal Railway, has already been described in this note. As the Corporation of Calcutta cannot arrange to introduce direct dumping of the refuse for want of sufficient land for dumping purpose, the working of the Municipal Railway should be improved so that the work of disposal of the Refuse is not dislocated and the Motor Vehicles Department which is responsible to transfer the refuse from the city to the Refuse Platform do not face difficulty due to complete failure of the Municipal Railway, in discharging their duties and responsibilities.

The Municipal Railway with steam locomotives in their present condition, as has been described by the Traffic Manager, surely cannot restore normal working. The cost of maintenance also appears to be very high. Some of the steam locomotives which have been found to be uneconomical from the point of view of maintenance and that those are not efficient for the purpose, should be withdrawn from the service. Required number of Diesel locomotives, which are very useful for the purpose of shunting and for such work as in the case of carrying the refuse, should be placed in service. So long the Corporation have a well equipped workshop (Entally Workshop) as also the Motor Vehicles Department, there should not be much difficulty in maintaining these Diesel locomotives. This matter should be considered very seriously by the Committee as the cost of operation of Municipal Railway on account of Locomotive Service in that case, will be considerably less.

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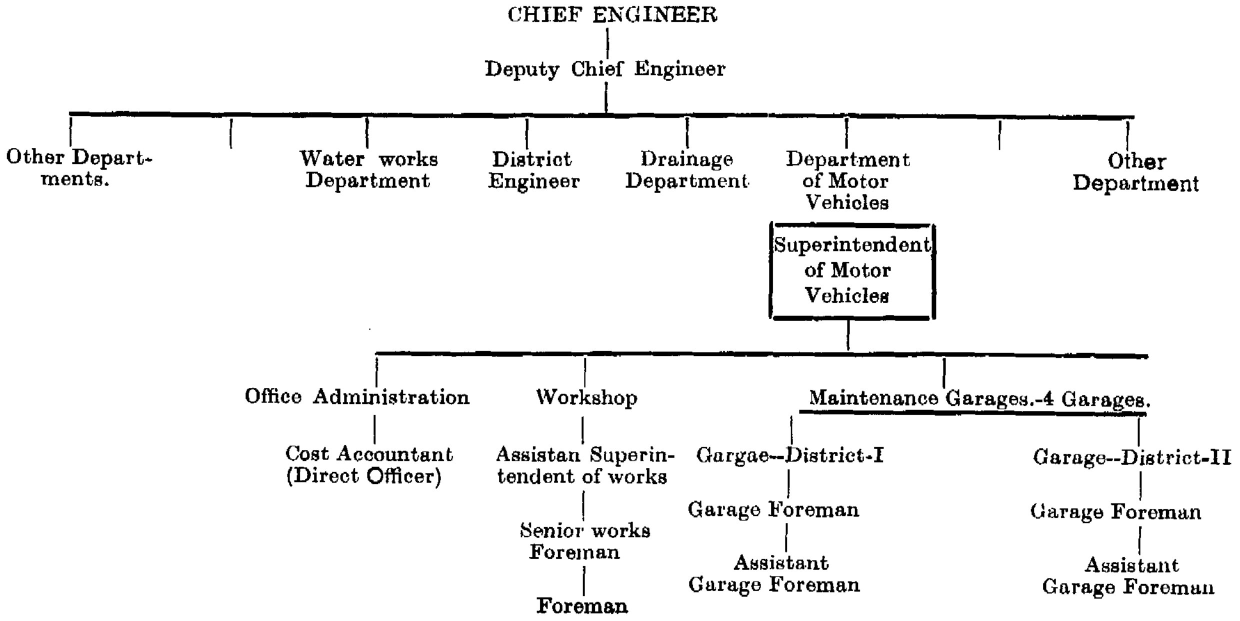
Appendix--I

CORPORATION OF CALCUTTA

Present Organisational Chart



Appendix--I (A)

Statement of Total Fleet held on 1.5.62
Type of Vehicles or Equipments

		Total No.	
GROUP--A			
1)	Lorries with intergral body (including one Weapon Carrier)	468	
2)	Mechanical Horses — — .... —	3	
3)	Tractors — — .... — —	30	
4)	Bull Dozer — — — —	2	
	TOTAL-		503
GROUP--B			
1)	Cars — .... — — —	25	
	TOTAL-		25
GROUP--C			
1)	Ambulance — .... —	29	
2)	Publicity Van — — —	2	
3)	Motor Cycle — — — —	4	
	TOTAL-		35
	GRAND TOTAL-		563
1)	Trailers — — —		176

Disposition of Vehicles & Equipments as on 1.5.62

	Number of Vehicles run	No. of Vehicles laid up	Total
District-- I	54	77	131
District-- II	58	46	104
District-- III	70	68	138
District-- IV	60	70	130
TOTAL--	242	261	503

Appendix--I (B)

STATEMENT OF VEHICLES HELD UP FOR MORE THAN SIX MONTHS

(*Excluding Tractor & Mechanical Horse*)

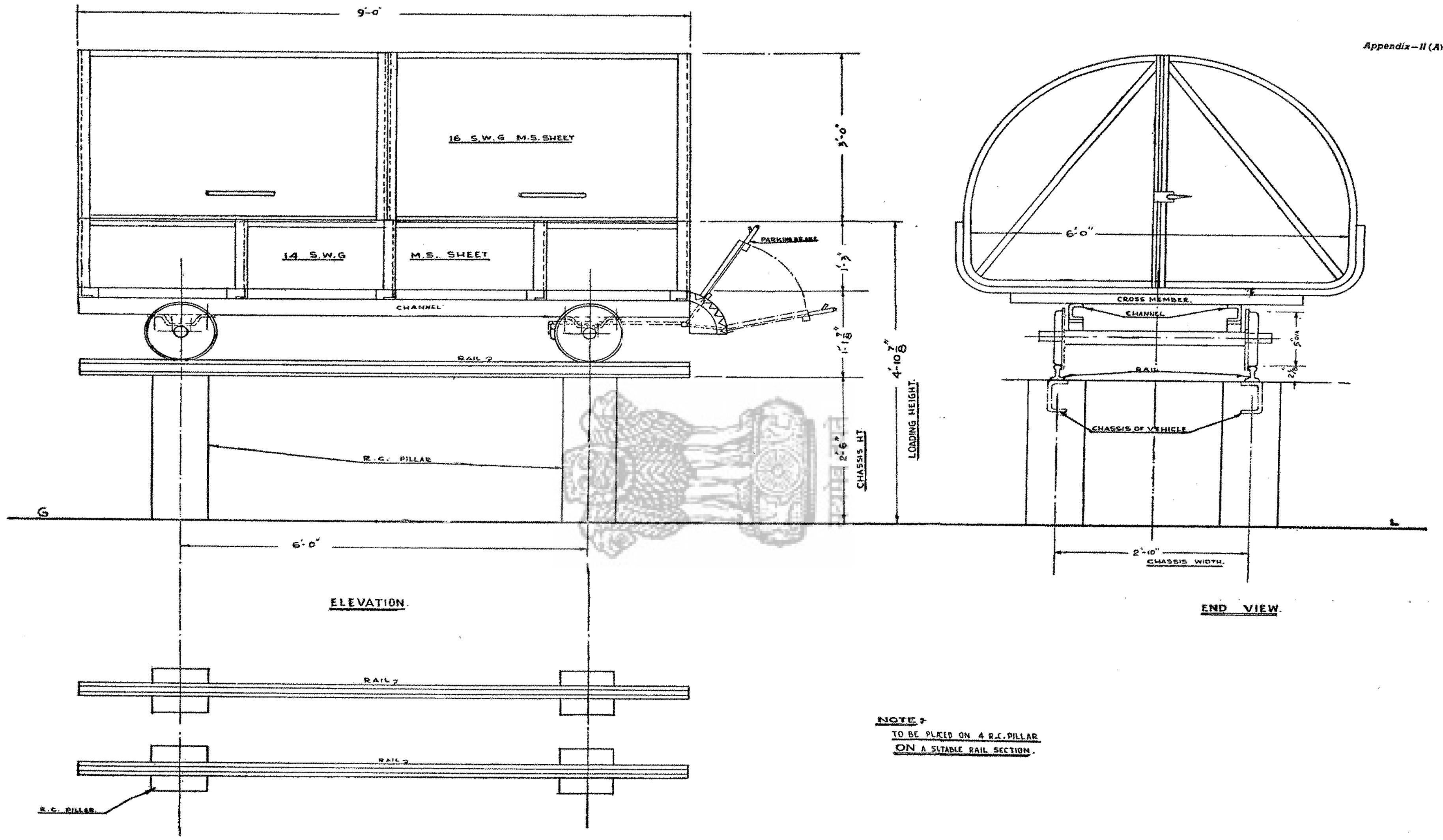
No. of District	G. M. C.	Chevrolet	Dodge	Bedford	Stude	Ford	Mercedes Benz.	International	Fordson Thames	Bautom Carrier	Scammel N/S.	Scammel R/C	
I	Total : 5 Upto 1948 5	Total : 3 Upto 1944 3	Total : 10 From '54 to '58 10	Total : 10 From '59-'60 10	Total : 11 From '57-'58 11	Total : 21 Upto 1951 15 From '52-'53 6	Total : 5 From '56-'58 5	Total : 2 From '42-'53 2	Nil -	Fil -	Total : 1 1953 1	Total : 6 From '52-56 6	
II	Total : 1 1948 1	Total : 2 '42-'44 2	Total : 7 Upto 1951 1 '52-'58 6	Total : 3 '59-'60 3	Total : 3 1957 3	Total : 11 Upto 1951 9 '53-'55 2	Total : 1 1958 1	Nil -	Nil -	Nil -	Nil -	Total : 2 1953 2	
III	Total : 1 1948 1	Total : 2 '42-'44 2	Total : 9 '55-'57 9	Total : 6 '59-'61 6	Total : 1 1957 1	Total : 24 Upto 1949 23 1955 1	Total : 7 '56-'58 7	Total : 1 1951 1	Total : 2 1955 2	Nil -	Nil -	Total : 2 1956 2	
IV	Nil -	Total : 1 1942 1	Total : 1 1954 1	Nil -	Total : 1 1957 1	Total : 9 '44-'51 6 '53-'55 3	Total : 1 1957 1	N il -	Total : 1 1955 1	Nil -	Nil -	Total : 1 1956 1	
Total upto 1951	7		1	-	-	53	-	3	-	-	-	-	72
From '52 onward	-	-	26	19	16	12	14	-	3	-	1	11	102
GRAND TOTAL	7	8	27	19	16	65	14	3	3	-	1	11	174

GROWTH OF FLEET

YEARLY ADDITION OF VEHICLES & EQUIPMENTS IN THE FLEET

YEAR	1942	1943	1944	1945	1946	1947	1948	1949	1951	1953	1954	1955	1956	1957	1958	1959	1960	1961	ADDITION OF VEHICLE			
DISTRICT	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	TOTAL	WITHIN 1951	AFTER 1951	
FORD		1 1	1 1 3 2 7	6 3 19 4 32	10 6 12 3 31	5 4 3 9 21		1 1 1 3	1 4 1 6		3 3	3 1 1 1 6							110	101	9	FORD
FORDSON										5 2 1 3 11	1 1								12		12	FORDSON
„ THAMES (S.X.)												3 1 4							4		4	„ THAMES (S.X.)
CHEVROLET	1 1 2 4		3 4 1 8				1 1 1 1 4												16	16		CHEVROLET
SCAMMELL R.C.										2 2 4			4 4 2 10						14		14	SCAMMELL R.C.
„ N.S.										1 1									1		1	„ N.C.
INTERNATIONAL	1 1								1 1 2	2 2 4									7	3	4	INTERNATIONAL
DODGE									2 2 4		1 1 1 3	2 2 10 14	1 9 10	14 17 5 12 48	6 6 3 3 18				97	4	93	DODGE
TATA MARCEDES													10 12 5 8 35	2 2 6 4 14	3 1 9 13	1 1			63		63	TATA MERCEDES
G.M.C.							5 1 1 1 8												8	8		G.M.C.
BANTOM CARRIER										1 1									1		1	BANTOM CARRIER
BEDFORD																2 2 3 3 10	12 10 12 12 46	1 3 3 1 8	64		64	BEDFORD
SCAMEL HORSE									1 1	2 2									3	1	2	SCAMEL HORSE
HANOMAG TRACTOR												6 6	3 3 1 2 9						15		15	HANOMAG TRACTOR
HARMELDED													2 2	1 1 1 1 4					6		6	HARMELDED
COCK SHUT										4 2 6									6		6	COCK SHUT
CASE TRACTOR				1 1					2 2										3	3		CASE TRACTOR
W/CARRIER										1 1									1		1	W/CARRIER
BULL DOZER														2 2					2		2	BULL DOZER
STUDEBAKER													5 5	19 5 10 19 53	1 11 12				70		70	STUDEBAKER
TOTAL	5	1	15	33	31	21	12	3	15	30	7	30	71	121	43	11	46	8	503	136	367	TOTAL
	136									367												

Appendix–II (A)



NOTE:-
TO BE PLACED ON 4 R.C. PILLAR
ON A SUTABLE RAIL SECTION.

PORTABLE REFUSE COLLECTOR FOR CONSERVANCY SERVICE.

CAPACITY : 6 CU.YD. (3 TON)

SCALE : 1'-0" : 1" (NOT TO BE SCALED.)

Appendix---III

STATEMENT OF BUDGET PROVISION UNDER DIFFERENT HEADS
DURING 1959-60, 1960-61, 1961-62 and 1962-63.

Budget Head.	Provision for 1959-60.	Provision for '60-'61	Provision for '61-'62	Provision for '62-'63
1) 92D (a)-Spare Parts etc.	3,00,000	3,15,000	4,37,500	4,50,000
2) 92D (1) (b) (i)-Petrol & Fuel.	11,00,000	12,00,000	12,00,000	12,00,000
3) 92D (1) (b) (ii)-Lubricants.	80,000	70,000	70,000	70,000
4) 92D (1) (b) (iii)-Tyres & Tubes.	1,00,000	2,12,500	1,70,000	3,00,000

ACTUAL EXPENDITURE ON THE FOLLOWING ITEMS
FOR THE LAST THREE YEARS

	1959-60.	1960-61.	1961-62
Budget Head No. 92D (1) (a)-Spare Parts.	3,24,236	3,15,000	3,03,901
Budget Head No. 92D (1) (b) (i)-Fuel	11,01,822	12,00,000	11,75,311
Budget Head No. 92D (1) (b) (ii)-Lubricants.	36,979	70,000	88,715
Budget Head No. 92D (1) (b) (iii)-Tyres & Tubes.	81,721	1,03,000	1,16,073
			16,84,000

Appendix---III A

	1959-60			1960-61			
	Amount (in Rs.)	Mileage	Cost per mile in np.	Amount (in Rs.)	Mileage	Cost per mile in Np.	Remarks.
Spares	** 3,24,236	35,34,523 (excluding the mileage of the Ambulance Car	08.89	3,15,000	38,11,537 (excluding the mileage of the Ambulance Car)	08.00	
Amount considered for the purpose of calculation.	* 3,14,236			* 3,05,00	....		
Lubricants.	36,979	....	01.15	70,000	....	01.84	
Tyres & Tubes.	81,721	....	02.31	1,03,000	....	02.70	

N.B---**Subsequently Motor Vehicle Department has informed that the cost of Spare Parts shown is inclusive of the cost of Spares for maintenance of Ambulance Car, but the mileage shown is excluding the Ambulance Cars.

*For the purpose of calculation an estimated amount say Rs. 10,000/--has been deducted on account of Spare Parts for maintenance Ambulance Car, from total cost shown.

Appendix—IV

STATEMENT SHOWING THE DISCREPENCY OF THE TIME AND ENGAGEMENT OF LABOUR IN HOUSE TO HOUSE COLLECTION

1) Time required to load a Unit (1 Pack full) in case of House to House collection.

	District-1.	District-11	District-111	District-1V	
Collection time (Hrs.)	2	2 1/2	2 1/2	2 to 2 1/2	
Journey Time (Hrs.)	1	1 1/2	1 to 1 1/2	1 to 1 1/2	Time shown is on the basis of unloading with the help of Tipping Gear.
2) Total Nos. of Labour engaged per trip per Track -					
In case of 3 Toner	4	4 to 5	4 to 5	5 to 6	
In case of 5 Toner		5 to 6			

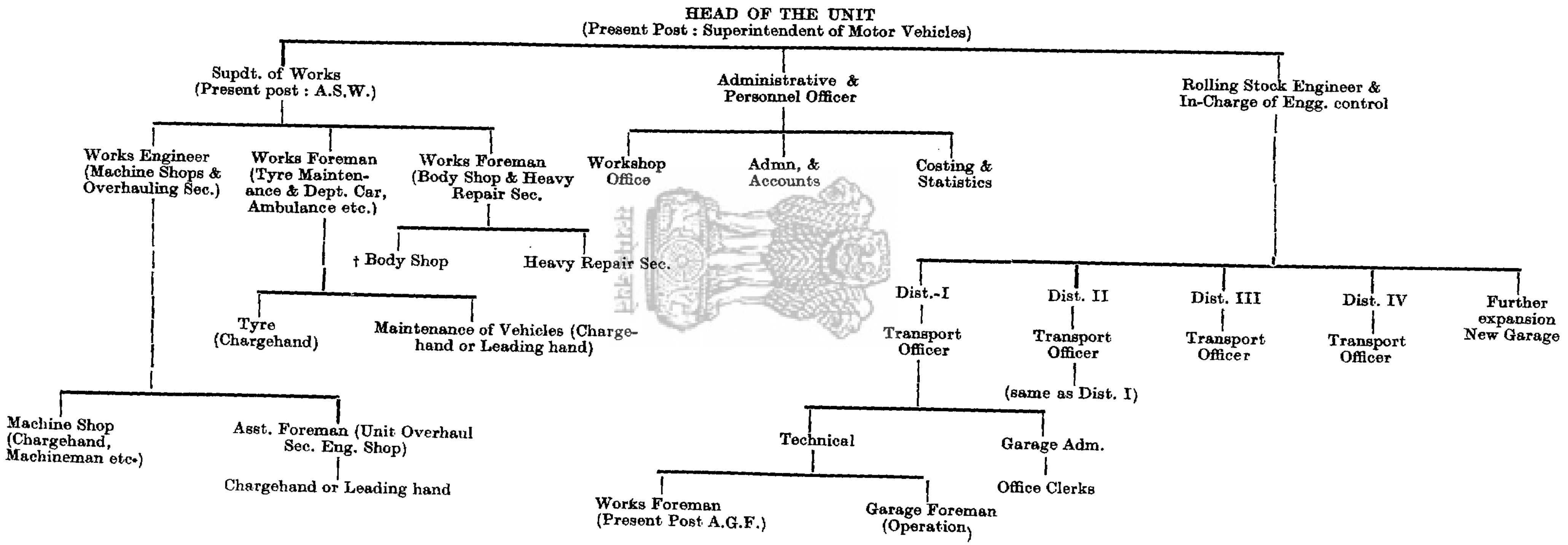
Appendix—V

STATEMENT SHOWING THE LABOUR EMPLOYED IN DIFFERENT DISTRICTS OF CALCUTTA CORPORATION

		DISTRICT -I		DISTRICT -II		DISTRICT -III		DISTRICT -IV		TOTAL	
		Labour	Establishment Cost (in Rs.)	Labour	Establishment Cost (in Rs.)	Labour	Establishment Cost (in Rs.)	Labour	Establishment Cost (in Rs.)	Labour	Establishment Cost (in Rs.)
(A)	Labour engaged for collecting Refuse from houses & carrying by Hand Carts to different Loading Centre and Sweeping & watering Roads.	1,200	97,500	896	67,200	889	75,565	1,186	98,432	4,271	3,38,697
(B)	Labour engaged for cleaning Gullypit.	142	10,650	100	7,500	102	7,670	194	14,550	538	40,370
(C)	Labour engaged for watering Roads (Mazdoors & Boy)	124	4,543	....	....	104	4,457	172	6,407	400	15,407
(D)	Labour (Running Labour) Lorry Mazdoor.	291	21,825	230	17,250	226	16,950	186	13,950	933	69,975
(E)	Labour engaged for Watch & Ward.	6	450	6	450	6	450	6	450	24	1,800
	GRAND TOTAL :-	1,863	1,34,963	1,232	92,400	1,327	1,05,092	1,744	1,33,789	6,166	4,66,249

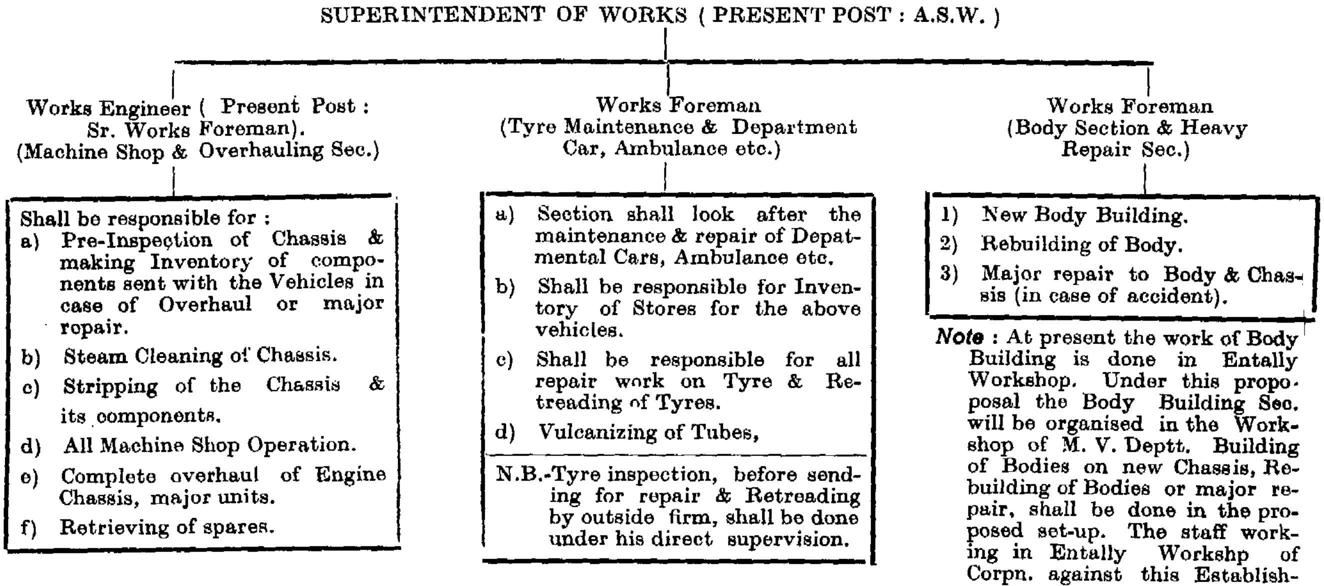
Appendix–VI

PROPOSED ORGANISATIONAL CHART–DEPARTMENT OF MOTOR VEHICLES


HEAD OF THE UNIT
(Present Post : Superintendent of Motor Vehicles)
Supdt. of Works
(Present post : A.S.W.)
Administrative & Personnel Officer
Rolling Stock Engineer & In-Charge of Engg. control
Works Engineer (Machine Shops & Overhauling Sec.)
Works Foreman (Tyre Maintenance & Dept. Car, Ambulance etc.)
Works Foreman (Body Shop & Heavy Repair Sec.
Workshop Office
Admn, & Accounts
Costing & Statistics
† Body Shop
Heavy Repair Sec.
Tyre (Chargehand)
Maintenance of Vehicles (Chargehand or Leading hand)
Machine Shop (Chargehand, Machineman etc.)
Asst. Foreman (Unit Overhaul Sec. Eng. Shop)
Chargehand or Leading hand
Dist.-I
Transport Officer
Dist. II
Transport Officer
(same as Dist. I)
Dist. III
Transport Officer
Dist. IV
Transport Officer
Further expansion New Garage
Technical
Garage Adm.
Office Clerks
Works Foreman (Present Post A.G.F.)
Garage Foreman (Operation)

† REMARKS : See note under set-up of Superintendent of Works.

Appendix-VI (A)



SUPERINTENDENT OF WORKS (PRESENT POST : A.S.W.)

Works Engineer (Present Post : Sr. Works Foreman). (Machine Shop & Overhauling Sec.)

Shall be responsible for :

- a) Pre-Inspection of Chassis & making Inventory of components sent with the Vehicles in case of Overhaul or major repair.
- b) Steam Cleaning of Chassis.
- c) Stripping of the Chassis & its components.
- d) All Machine Shop Operation.
- e) Complete overhaul of Engine Chassis, major units.
- f) Retrieving of spares.

Works Foreman (Tyre Maintenance & Department Car, Ambulance etc.)

- a) Section shall look after the maintenance & repair of Depatmental Cars, Ambulance etc.
- b) Shall be responsible for Inventory of Stores for the above vehicles.
- c) Shall be responsible for all repair work on Tyre & Retreading of Tyres.
- d) Vulcanizing of Tubes,

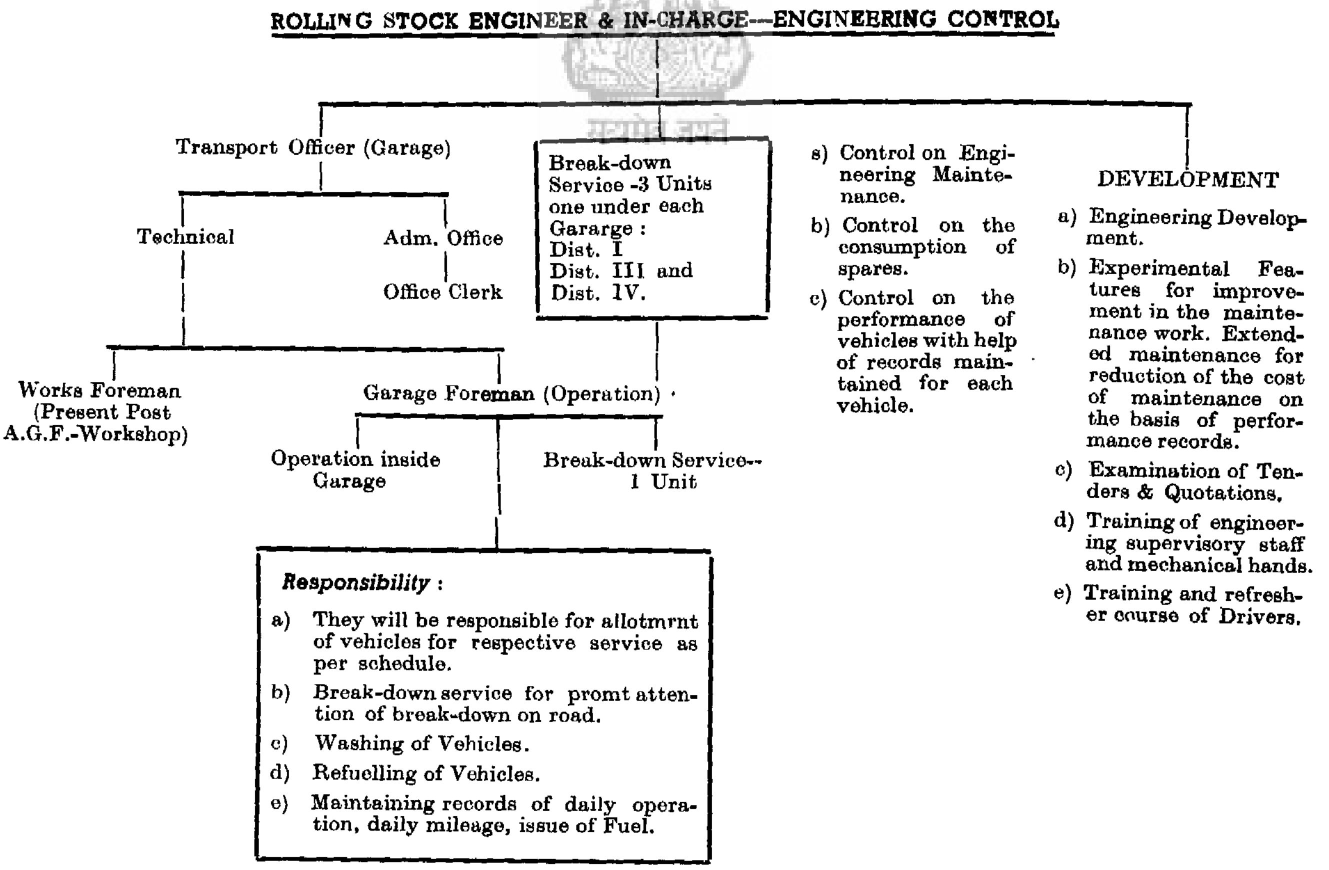
N.B.-Tyre inspection, before sending for repair & Retreading by outside firm, shall be done under his direct supervision.

Works Foreman (Body Section & Heavy Repair Sec.)

1) New Body Building.
2) Rebuilding of Body.
3) Major repair to Body & Chassis (in case of accident).

Note : At present the work of Body Building is done in Entally Workshop. Under this proposal the Body Building Sec. will be organised in the Workshop of M. V. Deptt. Building of Bodies on new Chassis, Rebuilding of Bodies or major repair, shall be done in the proposed set-up. The staff working in Entally Workshp of Corpn. against this Establishment, will be brought under Establishment of M.V. Deptt. This will help to cut down the overhead cost of Building, Rebuilding and maintenance of Body.

Appendix—VI (b)



ROLLING STOCK ENGINEER & IN-CHARGE—ENGINEERING CONTROL

Transport Officer (Garage)

Technical

Adm. Office

Office Clerk

Works Foreman (Present Post A.G.F.-Workshop)

Garage Foreman (Operation)

Operation inside Garage

Break-down Service— 1 Unit

Responsibility :

- a) They will be responsible for allotmrnt of vehicles for respective service as per schedule.
- b) Break-down service for promt attention of break-down on road.
- c) Washing of Vehicles.
- d) Refuelling of Vehicles.
- e) Maintaining records of daily operation, daily mileage, issue of Fuel.

Break-down Service -3 Units one under each Gararge : Dist. I Dist. III and Dist. IV.

- a) Control on Engineering Maintenance.
- b) Control on the consumption of spares.
- c) Control on the performance of vehicles with help of records maintained for each vehicle.

DEVELOPMENT

- a) Engineering Development.
- b) Experimental Features for improvement in the maintenance work. Extended maintenance for reduction of the cost of maintenance on the basis of performance records.
- c) Examination of Tenders & Quotations.
- d) Training of engineering supervisory staff and mechanical hands.
- e) Training and refresher course of Drivers.

N.B. Lorry Majdoor establishment shall be taken over to other establishment who will be responsible for better utilisation of the Lorry Majdoor.

Appendix VI (c)

DEMARCATION OF RESPONSIBILITY BETWEEN CENTRAL WORKSHOP & MAINTENANCE GARAGE IN THE EXECUTION OF WORK OF REPAIR, MAINTENANCE & OVERHAUL OF VEHICLE CHASSIS, ENGINE, BODY ETC.

Central Workshop

shall be responsible for :

a) Machine operation in major-minor repairs to components & vehicles.

b) Major repair to Unit, Chassis, Engine.

c) Re-Ringing & Decarbonising job on Engine.

d) Overhaul of Body, Chassis, Engine and other major units.

e) Reclamation of Parts.

f) Repairs to Tyres & Tubes.

Note : Vehicles will be sent to Central Workshop preferably according to the programme at certain predetermined mileage on the basis of experience (may be changed if the performance of any particular vehicle so demands.)

Maintenance Garage

shall be responsible for :

a) Maintenance work-Preventive & extended maintenance as well as controlled maintenance.

b) All running repairs including replacement of spares in course of repair work. When the performance will indicate that units such as complete Engine, Gear Box & similar other units are to be replaced, it should be done in usual course. Vehicle due for major overhaul will be sent to Central Workshop according to a predetermined programme as far as possible.

In case of repair to the Engine, such as replacement of Head Gasket--it will be done in the maintenance Garage. For all other work such as Engine Decarbonising etc. or major repair in replacing Bearings & Piston etc., the Engine shall be sent to Central Workshop.

c) Routine repair & renovation of the body.

d) The painting of the Body.

Note : Vehicles will be sent to Central Workshop according to schedule programme for overhaul of Chassis & Body, on the basis of predetermined mileage but if the performance appears to be very satisfactory in all respect, the programme of overhaul of a particular vehicle shall be deferred.

Appendix--VII

QUALIFICATIONS & EXPERIENCE FOR THE POST RECOMMENDED IN THE REORGANISATION OF THE SET-UP.

Supdt. of Works (Present Post : A.S.W.)

(a) Qualified professional Mechanical Engineer with knowledge of automobile practices and practical training as Apprentice Engineer for at least 2 years under a reputable Automobile Engineering firm engaged in the repairs & overhaul of automobiles, or a big Road Transport Undertaking engaged in the operation of a large fleet of Heavy Duty Commercial Diesel Vehicles.

(b) Experience of working in a reputable Automobile Engineering firm engaged in the repairs and overhaul of automobile preferably Diesel or a big Road Transport Undertaking engaged in the operation & maintenance of a large fleet of Heavy Duty Commercial Diesel Vehicles at least for 6 years. **Alternatively :**

(a) The candidate should have served an Apprenticeship in a reputable Automobile Engineering firm for 5 years.

(b) Experience of working in a large reputable Automobile Engineering firm for 15 years on repairs and overhaul of automobile chassis and accessories.

(c) Knowledge of the working of modern automotive machine tools & essential equipments. Knowledge of inventory of stores and knowledge of the management of a store. Knowledge of the elementary principle of production control. Knowledge of the technique of various welding process.

Note : Pay in the post should be commensurate with the responsibility in the work attached to the post and that the pay shall be comparable to the pay of a qualified Engineer in a similar post in a Government undertaking or semi-Government organisation.

Rolling Stock Engineer & In-Charge of Engineering Control.

(a) Qualified professional Mechanical Engineer with knowledge of automobile practices and practical training as Apprentice Engineer for at least 2 years under a reputable Automobile Enginering firm engaged in the repairs and overhaul of automobile or a big Road Transport Undertaking engaged in the operation of a large fleet of Heavy Duty Commercial Diesel Vehicles.

(b) Experience of working in a reputable Automoblie Engineering firm or a big Road Transport Undertaking at least for 3/4 years and acquainted with preventive as well as the controlled maintenance system, capable of analysing the performance records of different units engaged in a similar operation ; should

	have knowledge of the operational research to analyse the figure of lub. oil and fuel oil consumption of different garage under different conditions. (c) He should have knowledge of the performance of various units of automobile and the life of major units of automobile chassis. **Alternatively :** (a) The candidate should have served an apprenticeship in a reputable Automobile Engineering firm for 3 to 5 years followed by an experience of working in a big Road Transport Undertaking engaged in the oparation of a large number of fleet of Heavy Duty Commercial Diesel Vehicles, at least for 10 years. (a) He should have knowledge of inventory of stores. He should be capable to conduct training course of drivers, mechanical staff. *Note :* Pay in the post should be commensurate with the responsibility in the work attached to the post and that the pay shall be comparable to the pay of a qualified Engineer in a similar post in a Government undertaking or semi-Government organisation.
Works Engineer. (Present Post, Sr. Works Foreman)	(a) Qualified professional Mechanical Engineer with knowledge of automobile practices and practical training as apprentice Engineer for at least 2 years under a reputable Automobile Engineerning firm engaged in the repairs and overhaul of automobile or under a big Road Transport Undertaking engaged in the operation of a large fleet of Heavy Duty Commercial Diesel Vehicles. **Alternatively :-** The candidate should have served an apprenticeship in a reputable Automobile Engineering firm for 3 to 5 years followed by an experience of working in a big Road Transport Undertaking engaged in the oparation of a large number of fleet of Heavy Duty Commercial Diesel Vehicles, at least for 5 years. (b) Experience of the knowledge of the working of the modern automotive machine tools. Knowledge of the elementary principle of production control and knowledge of various process of welding. (c) Knowledge of the use of precision tools and gauges required for overhauling of engine and other major units of automobile. Knowledge of the working of modern automotive machine tools and equipments and knowledge of various process of welding. Capable to handle labour. *Note* : Pay in the post should be commensurate with the resposibility in the work attached to the post and that the pay shall be comparable to the pay of a qualified Engineer in a similar post in a Government undertaking or semi-Government orgnaisation.
Transport Officer (Garage).	(a) Qualified professional Mechanical Engineer with knowledge of automobile practices and practical training as Apprentice Engineer for 2 years in a reputable Automobile Engineering firm engaged in the repairs and overhaul of automobile, or a big Road Transport Undertaking engaged in the operation of a large fleet of Heavy Duty Commercial Diesel Vehicles. (b) Experience of working in a reputable Automobile Engineering firm engaged in the repairs and overhaul of automobiles preferably diesel or a big Road Transport Undertaking engaged in the operation and maintenance of a large fleet Heavy Duty Commercial Diesel Vehicles, at least for 2 years. Capable to handle labour. **Alternatively :** The candidate should have served an apprenticeship in a reputable Automobile Engineering firm for 3 to 5 years. Experience of working in a big Road Transport Undertakidg engaged in the operation of large fleet of Heavy Duty Commercial Diesel Vehicles, at least for 6 years and have knowledge of preventive maintenance. *Note :* Pay in the post should be commensurate with the responsibility in the work attached to the post and that the pay shall be comparable to the pay of a qualified Engineer in a similar post in a Government undertaking or semi-Government organisation.
Administrative & Personnel Officer	Good general education preferably a Graduate in arts/commerce. Office experince, knowledge of the factory rules, labour legislation, Motor Vehicles Act and Rules/Corporation Leave & Conducts Rules and experience of independent charge of an establishment and accounts. Pay comparable to the similar post in Government undertaking or semi-Government organisation.
Works Foreman	(a) The candidate should have good general education and should have served an apprenticeship in a reputable Automobile Engineering firm engaed in overhaul and repairs for 4 years or Apprenticeship at least for 3 years in a large Road Traansport Undertaking engaged in the operation and maintenance of Heavy Duty Commercial Vehicles. (b) 4 (four) years' experience of working in a big Road Transport Undertaking engaged in the operation of a large fleet of Heavy Duty Commercial Diesel vehicles and have knowledge of preventive maintenance. Preference should be given to a qualified Graduate Mechanical Engineers. NOTE : Pay in the post should be commensurate with the reponsibility in the work attached to the post and that the pay shall be comparable to the pay of a qualified Engineer in a similar post in a Govrnment Undertaking or semi-Govrnment organisation.

Appendix VIII

STRENGTH OF FLEET TO BE AVAILABLE FOR VARIOUS SERVICES AFTER THE PROPOSED REHABILITATION

I.	Existing strength of fleet (excluding car) as found on 1.5.62. ...	501	
	N.B.--Including Tractor -- 30 Mechanical Horse -- 3 33		
II.	***Less*** - Recommended to be condemned.	75	
	Total available —		426
	N.B.--72 Vehicles of the earlier model purchased before 1951 & 3 Tractors of earlier model.		
III.	New Vehicles added to the strength of fleet since 1.5.62		15
	TOTAL :--		441
	N.B.--The strength of 441 is including 102 vehicles of the later model which are expected to be made ready within a short period of time by additional effort of independent unit by the process of rehabilitation as recommended.		
IV.	***Less*** - 40% of 61 Vehicles of earlier model		24
	N.B.--61 Vehicles (purchased before 1951) of earlier model is also recommended to be condemned in the near future but for the time being 60% of this lot is expected to remain in service for some time.		
V.	Total strength to be available ultimately.		417
	Strength at the disposal of the Department excluding 102 vehicles held up at present. ...		315
	N.B.--Another lot of 15 new Vehicles on order to be added in the fleet shortly.		

APPENDIX-IX

REQUIREMENT OF FLEET FOR VARIOUS SERVICES SANCTIONED BY CORPORATION

GROUP-I--- Conservancy :

Refuse Collection	Regular	235+(6 additional temporary) = 241	
	Night Soil	37	
	Silt	33(A)	Total No. of services for removal of Silt-62. Part of the work such as Sewer Silt is done in the night (33). These vehicles may be used for all other Silt services in the day time.
	TOTAL :-	311	'A'
	Spare vehicle---***additional 15%***	47	
		358	
Total No. of vehicles required for Group-I including spare vehicles.		311+47=358	

GROUP--II

(*a*) ***Conservancy & other essential service--***

Refuse collection	241	
Night Soil	37	
Silt	33 (A)	As at 'A' above.
TOTAL ;-	311	
Spare vehicle--***additional 15%***	47	
	358 =358	

(*b*) ***Other essential services--***

Filtered water	12+2*= 14	--*Spare vehicles (ad-hoc.)
Corpse van	1 = 1	
Carcaas	4+1*= 5	--*Spare vehicle.
TOTAL :-	17+3 Spare	378
Total No. of vehicles including spare vehicles for Group--II.	328+50= 378	

GROUP--III Total sanctioned services (excluding car).

(a) Conservancy	311
Spare vehicle--***additional 15%***	47
(b) Other essential services	17
Spare vehicle--***additional 15%***	3
(c) Other services	36
Spare vehicle--***additional 10%***	4 =418

Total No. of Vehicles required including spare vehicles.

*For these services 15% spare will not be necessary. 10% is considered more than fair.

Mileage per day (on the basis of 40 miles of run every day of the effective fleet)

(a) Conservancy	9,640 miles.
(b) Silt	2,400 miles.
(c) Night soil	1,480 miles.
(d) Other services	2,120 miles.
TOTAL:-	15,640 miles.

Appendix X

DISTRICTWISE STATEMENT OF VARIOUS SERVICES

	DISTRICT - I		DISTRICT - II		DISTRICT - III		DISTRICT - IV		TOTAL		
	Total No. of services	Calculated mileage	Total No. of services	Calculated mileage	Total No. of services	Calculated mileage	Total No. of services	Calculated mileage			
Conservancy :											
Refuse collection	71 † 2 extra	2920	55	2200	50 † 4 extra	2160	59	2360	235 † 6 = 241	....	9,640 miles
Gullypit	9	-	6	-	2	-	-		17 = 17	....	680 miles
Nikashi Silt	0 † 1 extra	-	0 † 3 extra	-	0 † 2 extra	-	2 † 4 extra	-	2 † 10 = 12	....	480 miles
S I L T :											
(a) S. Silt	4	-	4	-	0 † 3 extra	-	10	-	18 † 3 = 21		
(b) Drainage	-	-	-	-	-	-	2	-	2 = 2		
(c) Silt	-	-	-	-	10	-	-	-	10 = 10		
TOTAL :-	4	-	4	-	10 † 3 extra	-	12	-	30 † 13 = 33	....	1,320 miles
GRAND TOTAL :-	84 † 3	-	65 † 3	-	62 † 9	-	73 † 4	-	284 † 19 = 303	....	12,120 miles
Night Soil	7	280	5	200	7	280	18	720	37 = 37	....	1,480 miles
Other Services											
(PART I)											
(a) Corpse Van	-	-	-	-	1	-	-	-	1 = 1		
(b) Filtered Water	3 † 1 extra	-	2	-	6	-	-	-	11 † 1 = 12		
(c) Carcaas	-	-	-	-	4	-	-	-	4 = 4		
TOTAL :	3 † 1 extra	-	2	-	11	-		-	16 † 1 = 17	....	680 miles
P A R T - II											
(a) EWS.	-	-	-	-	1	-	-	-	1 = 1		
(b) P.R.O.	4	-	3	-	2	-	4	-	13 = 13		
(c) Break-down	-	-	-	-	1	-	2	-	3 = 3		
(d) Asphot	-	-	-	-	12	-	-	-	12 = 12		
(e) H.P.L.	-	-	-	-	1	-	-	-	1 = 1		
(f) Store	-	-	-	-	-	-	1	-	1 = 1		
(g) Food Drive	-	-	0 † 1 extra	-	0 † 1 extra	-	-	-	0 † 2 = 2		
(h) Others	-	-	0 † 2 extra	-	0 † 1 extra	-	-	-	0 † 3 = 3		
TOTAL :	4	-	3 † 3	-	17 † 2	-	7	-	31 † 5 = 36	....	(36 † 17) = 53 = 2120
GRAND TOTAL .	102	-	81	-	108	-	100	-	= 391	....	15640 miles
No. of fleet in commission	54	-	58	-	70	-	60	-	242		
No. Laid up	77	-	46		68	-	70		261		
TOTAL :-	131	-	104		138		130	-	503		

SCC/-

THE POSITION OF CONSERVANCY SERVICES & COLLECTION OF REFUSE IN EACH DISTRICT WITH VEHICLES OF THE MOTOR VEHICLES DEPTT. AS ON 1.5.62.

Appendix. XI

Particulars	Pay load of the Truck (in Ton)	DISTRICT I				DISTRICT II				DISTRICT III				DISTRICT IV				TOTAL			
		No. of Vehicles utilised.	Average load carried (in Ton)	Trips attended	Total Refuse (in Ton)	No. of Vehicles utilised.	Average load carried (in Ton)	Trips attended	Total Refuse (in Ton)	No. of Vehicles utilised.	Average load carried (in Ton	Triqs attenped	Total Refuse (in Ton)	No. of Vehicles utilised	Average load carried (in Ton)	Trips attended	Total Refuse (in Ton)	No. of Vehicles utilised.	Average load carried (in Ton)	Trip attended	Total Refuse (inTon)
I.	1½	-	-	-	-	-	-	-	-	4	1.25	2	9	-	-	-	-	4	1.0	8	8
House-to-house collection	3	4	2.5	2	20	-	-	-	-	-	-	-	-	4	2.5	2	20	8	2.5	16	40
	4	-	-	-	-	-	-	-	-	1	4.0	2	8	-	-	-	-	1	4.0	2	8
	5	-	-	-	-	6	4.5	2	54	-	-	-	-	4	4.5	2	36	10	4.5	20	90
II.	1½	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
House-to-house and street collection combined	3	-	-	-	-	-	-	-	-	-	-	-	-	22	2,5	2	110	22	2.5	44	110
	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5	8	4.5	2	72	16	4.5	2	144	18	4.5	2	162	2	4,5	2	18	44	4.5	88	396
III.	1½	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Street collection	3	23	2.5	3	173	21	2.5	3	158	20	2.5	3	150	-	-	-	-	64	2.5	192	481
	4	-	-	-	-	1	4.0	3	12	-	-	-	-	-	-	-	-	1	4.0	3	12
	5	9	4.5	3	122	3	4.5	3	40	7 (3D/D)*	4.5	3	95	27+13 (D/D)	4,5	3	364	46	4.5	138	621
	-	44	-	-	-	47	-	-	-	47+3 (D/D)	-	-	-	46+13 (D/D)	-	-	-	184+16 (D/D)	-	-	-
TOTAL :					387				408				424				548	200		511	1766
Services sanctioned by Corporation :																					
Regular		71				55				50				59				235			
Extra Services (Temporary).		2								4								6			
TOTAL :		73			648	55			480	54			460				548	241			2136
Difference in No. of Vehicles.		29				8				4				59							

NOTE :-(1) It is assumed that for all practical purposes, the loading of the truck for removing Refuse on individual car is not always upto the available 'Pay load'. For purpose of estimation, the load carried by each vehicle per trip, has been taken as follows :

1.5 Ton	...	1.25 Ton per trip.
3 Ton	...	2.5 Ton per trip.
5 Ton	...	4.5 Ton per trip.

(2) The capacity of most of the vehicles (Lorries) now held up and expected to be rehabilitated soon to supplement the strength of the fleet, is 5 Ton. However, for the purpose of calculation 3 Ton capacity (on average) has been considered. These additional vehicles to be added to strength of fleet as on 1.5.62, in each of the Districts, will be used mainly for the street collection of "Refuse".

***D. D. represents vehicle used in double duties.**

Appendix: XI (a)

CONSOLIDATED STATEMFNT

(for 3 days collection of refuse by three Districts)

Date	No. of vehicles	Trips completed	Actually carried (in Tons)	Should carry (in Tons)	Remarks
13.6.62	**94**	**218**	**647**	**951**	
15.6.62	**104**	**220**	**648**	**944**	
18.6.52	**94**	**227**	**669**	**963**	

CONSOLIDATED STATEMENT FOR—13.6.62

Districts-I, II & III.

Dated 13.6.62	No. of vehicles	Carrying capacity (in Ton)	Trips completed	Actually carried (in Tons)	Should carry (in Ton)
District	13	5^{T}	31	104	155
I	4	4^{T}	11	34	44
	4	3^{T}	7	21	21
	1	2^{T}	1	3	2
Total	22		50	162	222
District	20	5^{T}	65	199	330
II	1	4^{T}	3	8	12
	17	3^{T}	38	110	114
Total	38		107	317	456
District	24	5^{T}	40	125	200
III	4	4^{T}	10	18	40
	6	3^{T}	11	25	33
Total	34		61	168	273
GRAND TOTAL FOR 3 DISTRICTS					
13.6.62					
Dt. I.	22		50	162	222
Dt. II	38		107	317	456
Dt. III	34		61	168	273
	94		218	647	951

CONSOLIDATED STATEMENT FOR - 15.6.62

Districts - I, II & III

Date 15.6.62	No. of vehicles	Carrying capacity (in Ton)	Trips completed	Actually carried (in Tons)	Should carry (in Tons)	Remarks
Distric	28	5^{T}	56	174	280	
I	6	4^{T}	12	44	48	
	10	3^{T}	15	45	45	
	2	2^{T}	5	10	10	
TOTAL	46		88	273	383	
District	18	5^{T}	48	150	240	
II	1	4^{T}	2	3	8	
	15	3^{T}	36	88	108	
TOTAL	34		86	241	356	
District	17	5^{T}	32	103	160	
III	2	4^{T}	3	7	12	
	5	3^{T}	11	24	33	
TOTAL	24		46	134	205	
GRAND TOTAL FOR 3 DISTRICTS :						
15. 6. 62 :						
District I.	46		88	273	383	
District II.	34		86	241	356	
District III.	24		46	134	205	
	104		220	648	944	

CONSOLIDATED STATEMENT FOR - 18.6.62

Districts - I, II & III

Date 18.6.62	No. of vehicles	Carrying capacity (in Tons)	Trips completed	Actually carried (in Tons)	Should carry (in Tons)	Remarks
District	15	5^{T}	36	131	180	
I.	3	4^{T}	12	43	48	
	4	3^{T}	7	20	21	
	3	2^{T}	7	19	14	
TOTAL	25		62	213	263	
District	22	5^{T}	64	196	320	
II.	18	3^{T}	42	105	126	
TOTAL	40		106	301	446	
District	16	5^{T}	35	106	175	
III.	4	4^{T}	8	18	32	
	8	3^{T}	15	30	45	
	1	$1\frac{1}{2}^{T}$	1	1	1½	
TOTAL	29		59	155	254	
GRAND TOTAL FOR 3 DISTRICTS :						
18. 6. 62 :						
District I	25		62	213	263	
District II	40		106	301	446	
District III	29		59	155	254	
	94		227	669	963	

Appendix XI (b)

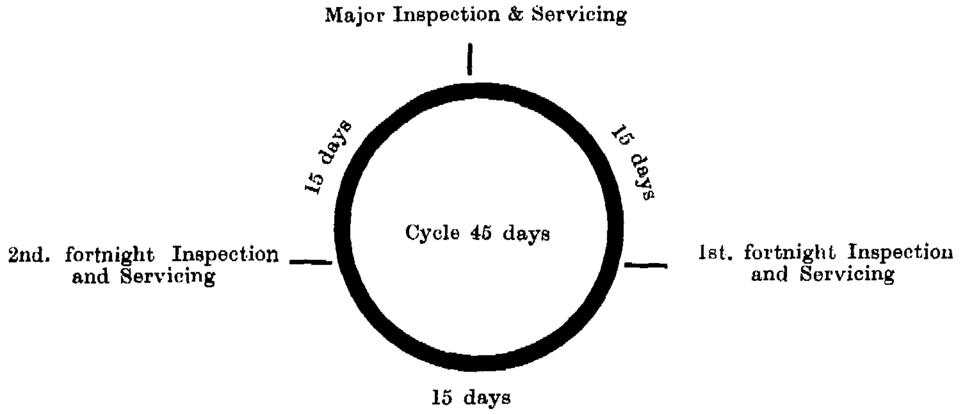
ESTIMATED QUANTITY (IN TONS) OF REFUSE REMOVED PER DAY FROM DIFFERENT DISTRICTS OF CORPORATION OF CALCUTTA.

	District	Quantity (in Tons)
1.	Cossipore	80
2.	District-I.	600
3.	District-II.	450
4.	District-III.	500
5.	District-IV.	450
6.	Tollygunge	35
		2115 Tons

N.B. - The statement as given by Chief Engineer, Corporation of Calcutta, during the enquiry.

Appendix--XII

SEQUENCE OF INSPECTION


Major Inspection & Servicing
15 days
15 days
Cycle 45 days
2nd. fortnight Inspection and Servicing
1st. fortnight Inspection and Servicing
15 days

Although daily mileage run per vehicle is only 40 miles (average), the condition of operation is quite arduous with so may stops & starts and frequent braking. This factor has been taken into consideration in drawing up the Sequence of Inspection.

Pro-rata replacement & adjustment by planned programme

1. After 1st. 500 miles---Advantage of free service by the Manufacturer should be utilised whenever possible. All bearing to be adjusted. Engine Oil, Gear Oil & Differential Oil to be changed.
2. Fuel Filter to be changed according to the design of the Filter and requirement of Engine.
   - (a) Felt (coarse) to be changed at every 5000 miles.
   - (b) Felt (Fine) to be changed at every 10000 miles.

   In case of Bedford & Perkins Diesel.
3. Oil Filter to be changed according to the design of the Filter and requirement of the Engine.
   - (a) Felt to be changed within 10000 miles.
   - (b) Cloth to be changed within 5000 miles

   In case of Bedford & Perkins Diesel.
4. Fuel Pump to be calibrated at every 15,000 miles.
5. Injector to be changed and Serviced Injector to be fitted at every major Inspection (1800 miles).
6. Engine Oil to be changed at every 1800 miles.
7. Front wheel Bearing to be adjusted between 5000 and 6000 miles.
8. Rear wheel Bearing to be adjusted at every 7500 miles.
9. Main Timing in case of P-6 Engine to be set correctly at every 10,000 miles.
10. Gear Oil to be changed at every 14,000 miles.
11. Differential Oil to be changed at every 14,000 miles.
12. Water Pump to be changed according to performance.
13. Radiator to be changed for Reconditioning at every 10,000 miles.
14. Fuel Tank to be taken down and cleaned between 5000 and 6000 miles.
15. Dynamo to be changed according to performance.
16. Self Starter to be changed according to performance.

SEQUENCE OF INSPECTION, PAINTING, REPAIR OVERHAUL ETC.

Capacity of a garage has been considered as 130 vehicles (max.)---

1) Major Inspection (1800 miles) on say 126 vehicles--
   a) 3 Vehicles for 3 days 9
   b) 4 Vehicles for 3 days 12
   TOTAL :- .... 21 per week i.e., 126 Vehicles in 6 weeks.

2) Fortnight Inspection (600 miles) on 126 vehicles-- ....
   *a) 10 Vehicles for 8 days 80
   *b) 12 Vehicles for 4 days 48
   TOTAL :- .... 128 Vehicles in 12 days.

***N. B.**-- Nos. to be distributed in two shifts. Maximum Nos, to be allotted per shift is 5 Vehicles.

Analysis

Total Vehicle considered .... 127 including Break-down Van.
Max. No. of Total Service in the present working programme. 110
17 Vehicles spare.

Disposition of Spare Vehicles

a)	To be held up for 1800 miles inspection	3	(Maximum-4 vehicles are required to be held up on any day).
b)	To be held up for 600 miles inpspection	5	(Maximum)-If required, 4 may be retained on any particular day by adjusting programme.
c)	To be held up for painting....	1	(5 days in a week)
d)	To be held up for accident repair	1	
e)	To be held up for running repair	2	
f)	To be held up for heavy repair	1	
g)	To be held up for overhaul at C/W.	2	
	TOTAL :-	15	
	O. K. Spare	2	
	GRAND TOTAL :	17	

Appendix,-XII (a)

DAILY SCHEDULE OF MAINTENANCE

Initial

1. Inspection prior to garaging :-
   a) Insist on the report from driver regarding defects in the vehicle, on the condition of the brake-Foot/Hand, Steering.

2. Refilling-Fuel
   Fuel cap must be fitted properly.
   N.B. Consumption in excess of the predetermined quantity to be reported for check up.
3. Check oil level in sump.
   Top up to the full mark on the dip stick.
   N.B. Oil consumption in excess of the normal consumption shall be reported.
4. Check inflation of tyre by roding.
   a) Cases of under inflation to be checked by pressure gauge. Tyre pressure to be checked every alternate day.

   N.B. If any tyre (wheel) is changed by a break-down squad on road, the wheel nut to be checked for tightness in the garage subsequently.
5. Refill Radiator---Report leaking Radiator hose.
   N.B. Cases of over heating to be reported to garage for necessary attention.
6. Washing on the body and under chassis.
   Body to be washed every day and chassis on alternate days.
   Colour code for each group such as Monday, Wednesday, Friday.
   N.B. Disinfictant to be sprayed.
7. Check free travel of Clutch.
8. Check bonnets for locking.
9. Check the condition of Electric indicator and rear view mirror.
10. Inspect bulb horn by blowing, body by scrutinizing damages if any on the body.
11. Check report of starting trouble---instance of report weak battery, check fan belt and dynamo belt.
12. Check battery, starter motor, dynamo by restarting engine---report any defect.
    a) Check light by switching on.

    N.B. Petrol must not be used to start a Diesel Engine whether it is under running repair, or under inspection, or it is a case of break-down on road.

EVERY INDIVIDUAL ITEM MUST BE INITIALED.

Approved-
Dock Foreman

Signature-
Inspector.

Appendix--XII (b)

MAINTENANCE SCHEME DOCK SHEET

Fortnightly Inspection and servicing.

This schedule is in addition to the Daily schedule of Maintenance.

Road test to be carried out to detect any defect in Steering, Brake (Foot & Hand), Transmission, Gear, Clutch, Rear Axle & to carry out necessary adjustment.

1. Check and tighten wheel nuts.
2. Inspect tyre for any cuts and seperation or for the condition i. e., grading, to be removed if it is time for recaping. Check any crack in tyre-rim, check tyre pressure.
3. Check alignment if necessary of front tyre if the wear so indicates.
4. Cleaning & Painting :- Every vehicle is to be washed daily--chassis before inspection is taken up. Touch up anti-corresive paint on the under chassis, mudguards and bonnets.

ENGINE

(a) Check Engine for loose manifold nuts, loose & chafing pipes, fuel or Servo brakes. *N. B.* Use rubber hose to protect the pipe where essential.

(b) Engine to be cleaned. Check engine idle speed, set idle speed correctly. Check tappet and set properly. Lubricate joints and links in the accelerator and other points. Oil bath air cleaner to be cleaned and topped to the correct level. Check engine mounting brackets. Check leakage of Engine lubrication oil and attend to the defect.

(c) Check up correct fitting of the tappet cover and the joints, if require to be tightened.

(d) Check fuel line for any leakage. Check performance of the Injector. (Injector need not be removed from the position)

(e) Check the control rod operation if it is sticking.

LUBRICATION

(a) Check and lubricate thrust bearing, King pin, Drop arms, Draglinks, Steering, Water pump, Shackle pin, Prop. shaft, Cross joint and Spline.
N. B. Over lubrication to be carefully avoided to prevent failure of the oil seal.

(b) Top up fuel pump and Governor.
The work done shall be recorded in a seperate sheet drawn up for the purposes.

(c) Check Gear and Differential oil leakage through packing and top up to the required level.

(d) Check Shock absorber as regards performance.

(e) All other grease nipple and lubrication points to be attended carefully.

ELECTRICAL

(a) Check and top up batteries, check terminal, vaseline to be used instead of grease--if the specific gravity is low, battery to be removed for charge.

(b) Inspect battery cradles, check self starter, light connection, side light, head light etc., (Specific gravity--as well as the work done to be recorded in the sheet devised for the purpose)

(c) Self starter, Dynomo, Dynomo drive to be lubricated to the required level.

BRAKE

Check all connections to vacuum tanks, Servo. Check any sign of leakage in the wheel cylinder. Top up Master cylinder and note the quantity. Check connection and condition of the Brake hose and all pipe lines and rods and linkage etc. Lubricate the joints.

BODY

Check body bracket packing and body bolts, examine the driver seat. Body patch work and painting to be attended.

CHASSIS

Check spring, holding down bolts, shackle bolts, hanger, front and rear spring clump, if required tighten up.

N. B. The 'U' bolt (Spring holding bolt) to be tightened to the correct pressure. In case of excessive elongation, the bolt to be replaced. Unscrew the nut and then tighten up.

STEERING

Inspect steering wheel (renew if required), check steering box holding bolt, check drop arm all joints, the rod, lubricate all joints.

N. B. King pin & Front Axle to be checked.

TYRE

Check inflation of tyre by roding. Cases of under inflation to be checked by pressure gauge. Tyre pressure to be checked every alternate day.

N. B. If any tyre (wheel) is changed by the Break-down squad on the road, the wheel nut to be checked for tightness in the garage subsequently.

EVERY INDIVIDUAL ITEM MUST BE INITIALED

Approved--
Dock Foreman,

Signature--
Inspector,

MAINTENANCE SCHEME DOCK SHEET---*Please see page (xxii)*

Appendix XII (c)

CORPORATION OF CALCUTTA
DRIVERS DAILY REPORT
1st SHIFT

Vehicle no District 1/2/3/4

Date

Certified that the Vehicle is O. K.

Foreman/Asst. Foreman

গাড়ী লইবার পূর্ব্বে :

মবিল, ডিজেল বা পেট্রোল, রেডিয়েটারের জল, টায়ার, ব্যাটারী ও অন্যান্য সব ঠিক পাইয়াছি।

ড্রাইভারের নম্বর ড্রাইভারের স্বাক্ষর

ডিউটি সমাপ্তির সময় নিম্নোক্ত ত্রুটি পাইয়াছি।

১। ইঞ্জিন (Engine)
২। গিয়ার (Gear)
৩। ক্লাচ (Clutch)
৪। ব্রেক (Brake)
৫। রেডিয়েটর (Radiator)
৬। ডায়নামো (Dynamo)
৭। লাইট (Light)
৮। ষ্টিয়ারিং (Steering)
৯। পিক্আপ (Pick-up)
১০। ষ্টার্টিং (Starting)
১১। ধোঁয়া (Smoke)
১২। অন্যান্য দোষ

যেখানে দোষ তাহার পাশে X এইরূপ চিহ্ন দিবেন :

দোষের বিবরণ :---

সময় সুরু শেষ

শিফট বদলির সময় উপরিলিখিত দোষ মেকানিককে বুঝাইয়া দিলাম।

ড্রাইভারের স্বাক্ষর ও নম্বর

দ্বিতীয় শিফটে গাড়ী ছাড়ার পূর্ব্বে দোষ সংশোধন করিয়া দেওয়া হইল।

স্বাক্ষর/ইনস্পেক্টর

CORPORATION OF CALCUTTA
DRIVERS DAILY REPORT
2nd SHIFT

Vehicle no District 1/2/3/4

Date

দ্বিতীয় শিফটের ড্রাইভারের বিবরণ :

প্রথম শিফটের ড্রাইভারের নিকট গাড়ী বুঝিয়া পাইয়া মবিল, ডিজেল বা পেট্রোল, রেডিয়েটারের জল, টায়ার ব্যাটারি ও অন্যান্য সব জিনিষ চেক করিয়া বুঝিয়া লইলাম।

ড্রাইভারের নম্বর ড্রাইভারের স্বাক্ষর

ডিউটি সমাপ্তির সময় নিম্নোক্ত ত্রুটি পাইয়াছি।

১। ইঞ্জিন (Engine)
২। গিয়ার (Gear)
৩। ক্লাচ (Clutch)
৪। ব্রেক (Brake)
৫। রেডিয়েটর (Radiator)
৬। ডায়নামো (Dynamo)
৭। লাইট (Light)
৮। ষ্টিয়ারিং (Steering)
৯। পিক্আপ (Pick-up)
১০। ষ্টার্টিং (Starting)
১১। ধোঁয়া (Smoke)
১২। অন্যান্য দোষ

যেখানে দোষ তাহার পাশে X এইরূপ চিহ্ন দিবেন :

দোষের বিবরণ : —

সময় সুরু শেষ

ড্রাইভারের স্বাক্ষর ও নম্বর

দ্বিতীয় শিফটের পরে ড্রাইভারের নিকট হইতে কি কি দোষ আছে জানিয়া গাড়ী পাইলাম

স্বাক্ষর/ইন্স্পেক্টর

Appendix-XIII

LIST OF MACHINE TOOLS AND EQUIPMENTS RECOMMENDED FOR IMPROVEMENT OF WORK IN THE MOTOR VEHICLE WORKSHOPS

Machine Tools

1)	High Speed Engine Lathe		
	(a) Precision type	1	(Swing Over bed--26" (Min.) Distance between Centre minimum)---6'-6"
	(b) Precision type (H.M.T. or Kirloskar).....	1	(Distance between centre --- 4'-6" Height of Centre --- 0-10"
2)	Brake Drum Lathe	1	
3)	a) Cyl. Boring Machine (Heavy duty).	1	
	b) Cyl. Honning attachments	1	
4)	Radial Drill	1	
5)	Main Brg. Line Boring Machine	1	
6)	Shaping Machine	1	
7)	Crack Detector	1	

Fuel Injection Equipment Section :

1)	Injector Needle & Nozzle Reconditioning Machine.	1
2)	Test Pump---Injector Servicing.	3
3)	Fuel Pump Calibrating Machine (Minor Type).....	1
4)	Governor Vacuum Testing Equipment	1
5)	A.C./D.C. Motor for Injector Nozzle Lapping.	2

Electrical & Servicing :

Electrical Testing Bench---Cut out setting Testing Self Starter, Dynamo etc.	1

Servicing Equipment Central Workshop :

Air Compressor	1
High Pressure Oil & Grease Pump	1
High Pressure Steam Jenny	1
Gear & Diff. Oil Dispensing equipment portable hand operated.	2

TYRE :

Tube vulcanising machine	3
Tyre vulcanising mould	3

Retrieving Section

Welding Set - Transformer Welding Set	2	
Argon Arc Welding set	1	
Metal Spray Equipment complete with Sand Blasting arrangement, Air Compressor etc.	1	complete set.

Body Building Section

1)	Sheet Bending Roll Machine ---Power Driver	2
2)	Shearing Machine	1
3)	Metal Cutting Circular Saw	1
4)	Welding Set Motor Generator	3
5)	Gas Welding Set	5

Equipments for Garage

1)	Washing :		
	High Pressure Car Washer....	2	Nos. in each Garage
2)	Servicing Equipment :		
	Hoist 5 Ton capacity	1	
	Air Compressor	3	
	High Pressure Oil & Grease Pump	2	
	Gear & Diff. oil Dispensing Equipment (portable hand driven)	1	
	Floor Crane	1	(2 ton capacity)
	Hydraulic floor Jack	2	
	Hydraulic Bottle Jack	6	
	Battery Charger	1	
	Battery Cell Tester	2	
	Motor Generator (Electrical AC/DC) Welding Set	1	
	Gas Welding Set	2	
	Tube Vulcanising Machine....	1	

N.B. 1) There Should be Tank Installation for different grade of Lubricating oil --Gear Diff. Engine and there should be mini-Meter to note the amount of oil drawn.

2. There should be net work of High Pressure Air Line at the Pit & different place for maintenance & repair.

Appendix-XIV

STAFF FOR MAINTENANCE & OVERHAUL OF MOTOR VEHICLES as on 1.5.62

Disposition of staff under different units (skilled & unskilled)

I	Unit No.	Skilled & semi-skilled	Unskilled	Total
1.	Dist : I	36 (including 2 deputed from C. W.	9	45
2.	Dist : II	22	6	28
3.	Dist : III	33	8 + 8 =16	49
4.	Dist : IV	27	5	32
5.	Central Workshop	90 (excluding 2 deputed to Dist : I)	28	118
	Total	208	64	272

Total staff---272

II (a) Total No. of car for departmental use, ambulance, & motor cycle etc. maintained by the Department.	60
(b) If staff for repair & maintenance is allowed at the rate of 0.4 per vehicle (on the total strength) Total staff required	24
III. (a) Thus staff available for repair and maintenance of fleet (motive-units-excluding cars)	248
(b) Deduct 20 Nos. of staff for maintenance of trailer-body and chassis, total ataff thus available for maintenance of the motive units	228
(e) Staff ratio for effective fleet of 242 vehicles (as on 1.5.62)	0·9 per vehicle
(d) Staff ratio for the total fleet 327 (excluding the Departmental car and ambulance etc. and the vehicles held up for more than six months as found on 1.5.62)	0·7 per vehicle
(e) If staff is allowed at the rate of O·6 per vehicle for the total fleet required for different services (for 432 vehicles) excluding car for departmental use, ambulance etc.	Staff reqd. 259
Therefore additional staff required	31 Nos

Note :- To compensate the strength of staff on leave for various reasons, there should be some provision in the total strength sanctioned by Corporation. In this case, however, staff has been assessed in the ratio of 0.6 per vehicle in the total strength of the fleet instead of effeetive fleet. As 5·/. vehicle will be off the road for overhaul and heavy repairs, the extra staff on this account will compensate the number of staff on leave for various reasons.

Appendix - XV

STATEMENT ON THE WORKING OF LOCOMOTIVE AS SUBMITTED BY TRAFFIC MANAGER

Railway Department--

(i) The number of locomotive held as on 1. 5. 62. — 7 Nos. *viz.*, 1,2,3,4,11,12 & 15 (Nos. 1,2,3,4 & 12 are in working condition and nos. 11 & 15 are lying in the shed for repairs by E. W. S.). In this connection, the following statement for more detailed report is submitted.

First date of commission		Date in commission after last repair by E. W. S.
No. 1 - 15.8.56	—	26.4.62
No. 2 - 15.8.56	....	25.3.62
No. 3 - 21,10.58	....	5.8.61
No. 4 - 10.10.58	....	18.4.62
No. 11 - year 1920	....	x x
No. 12 - year 1925	....	14.8.61
No. 15 - year 1930	....	x x

(ii) No. in commission — On 1.5.62 - 3 Nos. *viz.*, No. 2,3 & 4.

N. B. Condition of the aforesaid locos are not satisfactory due to leakage of Boilers etc. inspite of repeated repairs. Regular annual inspection of boiler and overhauling are not possible due to shortage of Locos.

(iii) ***Service--***

(a) Schedule operation — Three Locomotives are in operation daily as available.

(b) Time per trip to Dhapa — Generally 8 hrs. of duty is allotted for each shift of Loco.

(c) Number of wagons — There is a total strength of 327 nos. of refuse wagons out of which 200 to 210 (av.) are in commission per day. The rest wagons lie either in E.W.S. or in Rly. Yard for necessary repairs etc.

N. B. The position of wheels & axles of wagons are not satisfactory due to non replacement during the last 12 years. The worn out wheels and axles require immediate replacement.

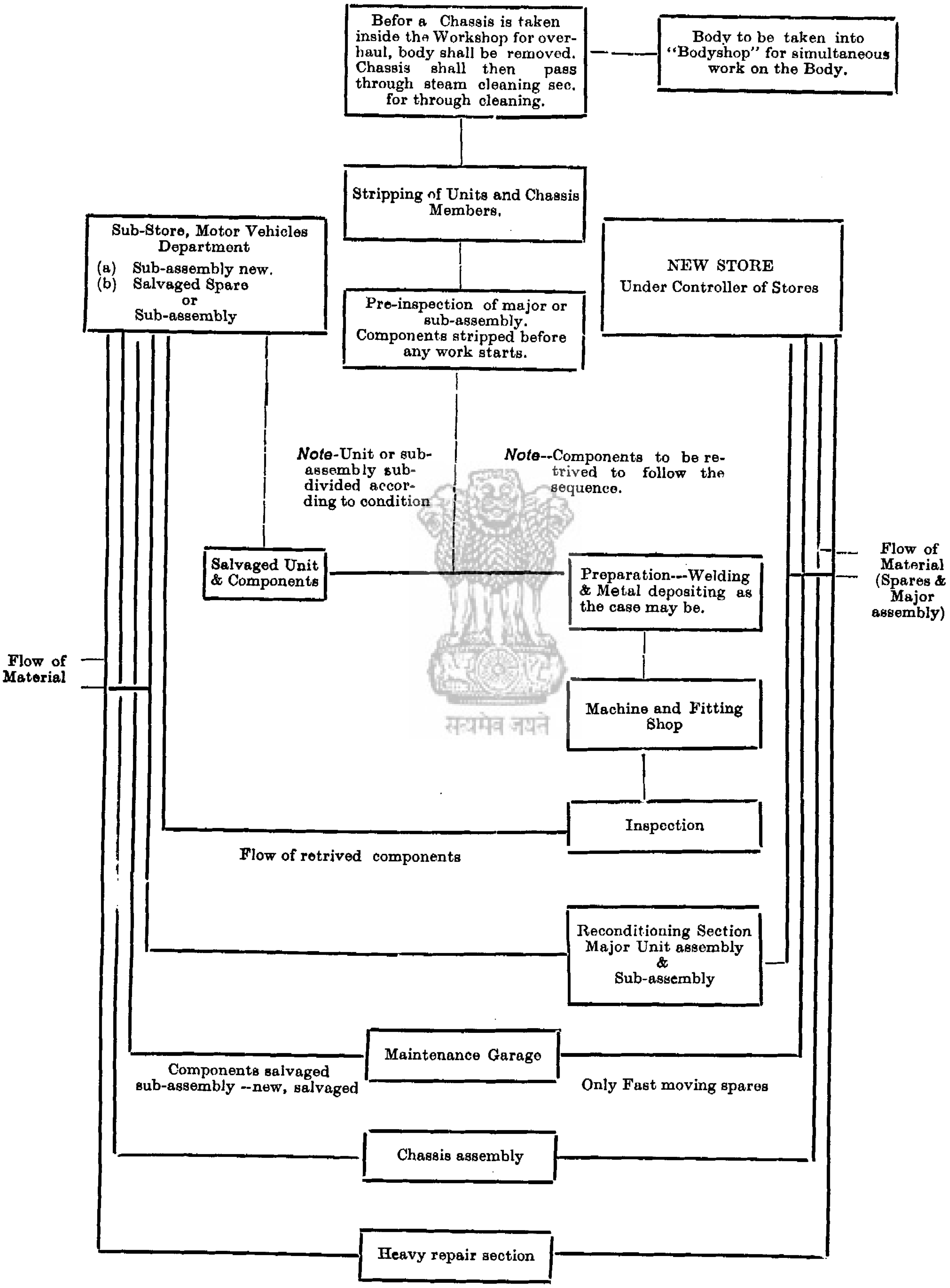
(d) Capacity of each wagon--450 cft. or 10 tons of refuse.

(iv) Expenditure for maintenance per year

	LABOUR	MATERIALS	REMARKS
(A) Locomotives.	(a) Repairs by E.W.S. = Rs. 50,000/- (approx.) (b) Maintenance by the Department = Rs. 25,000/- Rs. 75,000/- (approx) (including pay & allowances *viz.*, D.A., H.A. & Addl. D.A.)	(a) Repairs by E.W.S. = Rs. 50,000/- (b) Maintenance by the Department = Rs. 10,000/- Rs. 60,000/-	For operation of Locos there is an addl, expenditure for (i) Labour = Rs. 66,000/- (approx.) (ii) Materials = Rs. 36,000/- (Coal, Oil etc) (approx.) Rs. 1,02,000/- (approx.)
(B) Wagons.	(a) Repairs by E.W.S. = 1,25,000/- (approx) (b) Maintenance by the Department. = 37,000/- (approx) Rs' 1,62,000/- (approx) (including pay & allowances *viz.*, D.A. H.A. & Addl. D.A.)	(a) Repairs by E.W.S. = 1,25,000/- (approx) (b) Maintenance by the Department. = 10,000/- (approx) Rs. 1,35,000/- (approx)	
(C) Permanent Way	(a) Maintenance by the Department = Rs. 96,000/- (approx) (including pay & allowannes *viz.*, D.A., H.A. & Addl. D.A.)	(a) Repairs by E.W.S. = Rs. 2,000/- (approx.) (b) Store *viz.*, Rails B.G. Sleepers, Points & Crossing with their accessories = Rs. 1,38,000/- Rs. 1,40,000/- (approx)	

Appendix--XVI

WORK PLAN — CENTRAL WORKSHOP


Befor a Chassis is taken inside the Workshop for overhaul, body shall be removed. Chassis shall then pass through steam cleaning sec. for through cleaning.
Body to be taken into "Bodyshop" for simultaneous work on the Body.
Stripping of Units and Chassis Members.
Sub-Store, Motor Vehicles Department
(a) Sub-assembly new.
(b) Salvaged Spare or Sub-assembly
NEW STORE
Under Controller of Stores
Pre-inspection of major or sub-assembly. Components stripped before any work starts.
Note-Unit or sub-assembly sub-divided according to condition
Note--Components to be retrived to follow the sequence.
Salvaged Unit & Components
Preparation---Welding & Metal depositing as the case may be.
Flow of Material (Spares & Major assembly)
Flow of Material
Machine and Fitting Shop
Inspection
Flow of retrived components
Reconditioning Section Major Unit assembly & Sub-assembly
Maintenance Garage
Components salvaged sub-assembly --new, salvaged
Only Fast moving spares
Chassis assembly
Heavy repair section

MAINTENANCE SCHEME DOCK SHEET

[This schedule is in addition to the Maintenance Scheme
Fortnight Inspection and Servicing.]

Garage :- Vehicle No. :- Date :-

Major inspection
and servicing.

Items for clearance	*Initials*
(1) Clean the Engine.	…………………
(2) Start and warm up.	…………………
(3) Drain out Engine oil, clean the filter and refit.	…………………
(4) Check pipe line (fuel, oil and water) for any leak.	…………………
(5) Clean fuel pre filter, final filter and refit.	…………………
(6) Clean air filter, (air cleaner) and top-up to the level.	…………………
(7) Check pump coupling according to the type of vehicles.	…………………
(a) Check engine performance and adjust tappets if required.	…………………

N.B. The last date of Eng. oil change for any reason may be verified before change. Filter to be changed if due according to the programme. Check valve timing and fuel pump timing. Performance to be noted for rectification of defect.

BRAKE

8. (a) Adjust brake (foot & hand) as required--relining to be done according to condition of lining.	…………………
(b) Check brake pipe lines (Servo connection).	…………………
(c) Drain servo and vacuum tank, lubricate the nipples or caps on the servo and wheel cylinder.	…………………
(d) Strainer air compressor wherever fitted to be cleaned and lubricated--element to be replainished if required.	…………………
(e) Check wheel cylinder and master cylinder buckets.	…………………
(f) Check performance of main servo.	…………………
(g) Examine brake, rods, clean and lubricate all joints.	…………………

CHASSIS

9. (a) Examine road spring and holdidg down bolts.	…………………
(b) Change defective shock absorber.	…………………
(c) Check oil or grease in rear wheel hub Differential and Gear box.	…………………
(d) Clean breather on rear axle (if there is provision).	…………………
(e) Check Differential backlash, if any.	…………………
(f) Check universal joints and bolts, check if oil leaking through the oil seal.	…………………
(g) Check relief valves functioning.	…………………

Items for clearance	*Initials*
10. Check correct operation of the clutch and adjust as required.	…………………
11. Check Fuel tank, brackets and any leakage in the tank.	…………………

N.B. Proper cap to be fitted---Water contamination to be avoided.

12. Check radiator for any leakage, replace hose pipe. If required, check Radiator mounting and Tie rod.	…………………

(*N.B.* Radiator cap must be fitted.)

13. Check engine mounting front and rear.	…………………
(a) Check relief valve if they are functioning.	…………………
(b) Check oil pressure and note.	…………………
(c) Service Injectors and change if required.	…………………
(d) Prime oil pump in case of P-6 Engine,	…………………

N.B. Filter to be changed if required as per programme.

ELECTRICAL

14. (a) Check self starter alignment and strap to be tightened, if necessary.	…………………
(b) Examine side light & head light and all electrical connections.	…………………
(c) Check electrolyte and batteries.	…………………
(d) Apply vaseline on battery terminal. (*N.B.* Grease must not be used).	…………………
(e) Specific gravity to be checked and noted.	…………………
(f) Check fan belt and adjust properly.	…………………
(g) Check dynamo performance (set cut out if required).	…………………

TOUCH UP PAINT

15. (a) All damages in body to be repaired as necessary. Apply *Anticorresive Paint on the chassis, body and mudguards.*	…………………
(b) Number plate to be checked and repainted.	…………………

N.B. Every individual item must be initialed.

Approved
Dock Foreman

Signature
Attendant/Group Leader